Intrasite Ceramic Distribution Variation at Vésztõ-Bikeri, Hungary

A Senior Honors Thesis

Presented in Partial Fulfillment of the Requirements for Graduation with Distinction in Anthropology in the undergraduate colleges of The Ohio State University.

By

Alexander Tebben

The Ohio State University

June 2006

Project Advisor: Dr. Richard Yerkes, Department of Anthropology

Table Of Contents:

Introduction-

The site of Vésztõ-Bikeri is a former village of the Early Copper Age Tiszapolgár culture. Excavation of the site was conducted by the Körös Regional Archaeological Project, which was begun in 1998 William Parkinson (University of Michigan), and Attila Gyucha (Múnkacsy Mihály Múzeum in the city of Békéscsaba). This project is a multinational exploration of the changes that took place on the Great Hungarian Plain at the end of the Late Neolithic period and the beginning of the Early Copper Age (Parkinson 1999, 2000; Yerkes, Gyucha, Parkinson 2001). With assistance from the KRAP project and a National Science Foundation Research Experience for Undergraduates Grant, I was able to participate in project excavations during the summer of 2005. The project I chose to undertake during this period is an analysis of the function and distribution of the ceramic vessel types that were found at the site of Vésztõ-Bikeri.

Preliminary analyses have revealed two to four potential house structures. Two of these structures are the areas of primary interest to this project. By examining each of the individually-dug excavation units (EUs) present within the area containing the structures, I hope to determine if there are any patterns of ceramic vessel distribution and use both within and between the blocks in which they are located. As ceramic Spatial analysis has never been done before on a Tiszapolgár house structure perhaps this project will aid in the understanding of how the site was actually used. That is the focus of this thesis.

The Late Neolithic/Early Copper Age Transition

Imperative to the understanding of the nature of the site of Vésztõ-Bikeri is knowledge of the time during which it was occupied. During the late Neolithic period (7000-6500 BCE), the Great Hungarian Plan was occupied by three culturally distinct groups: the Tisza, the Herpály, and the Csöszhalom (Bognár-Kutzián 1963, 1972; Parkinson 1999).

Settlement during the late Neolithic was characterized by a relatively low number of sites that are generally found in close relation to one another. Most settlements are large, continually inhabited, multilayer component tell sites. Houses at these sites were typically large buildings with multiple rooms and occasionally more than one level. The site of Vésztõ-Bikeri however, was a village in the early Copper Age (6500-6000 BCE). At the end of the Late Neolithic, there was an extreme change that swept across Great Hungarian plain in eastern Hungary. By the dawn of the Copper Age, the three Neolithic cultures had been replaced by a single group: the Tiszapolgár. Tiszapolgár sites differ greatly from those of their predecessors. Copper Age sites are generally smaller single component sites with small single-room houses instead of the large multi-component sites from earlier ages (Figure 1). The site of Vésztõ-Bikeri is a prime example of this new site form. (Bognár-Kutzián, 1972; Parkinson, Gyucha, Yerkes, Hardy, and Morris 2004; Parkinson, Yerkes, Gyucha 2004)

Methods

This thesis represents the refining of a variety of spatial analyses that have been carried out. There are two structures that are believed to have been houses on the site. Though analyzing each of the individually dug Excavation Units (EUs) I will attempt to

determine if there are any patterns of ceramic vessel use both in and between the blocks that contain the structures.

There were many steps to this project that has eventually culminated with the analysis of the distribution and use patterns of ceramic vessel types at Vésztõ-Bikeri. During my time in Hungary, I was able to create a non-statistical comparison of the ceramic distribution within the excavated blocks. The frequency of each of the ceramic vessel types was later compared across each block using a Student's t-test. The initial project was completed in Vésztõ during the summer of 2005.

Using a catalogue of all of the ceramic sherds found during the KRAP excavations at Vésztõ that was created by Dr. William Parkinson in a FileMaker Pro database; I concentrated my efforts on information that pertains only to sherd vessel type and location within the block. I exported the relevant data from all of the sherds that were of any distinguishable vessel type, as listed in the database, to a Microsoft Excel spreadsheet. With this spreadsheet, I was able to find the total number of each vessel type in each block. This information was used to perform a single sample Student's T-test to make a comparison between actual and expected frequency of vessel types in each of the nine blocks. The focus of the project was narrowed further after these initial analyses to focus on patterns between the two house structures in blocks two and nine. To make the analysis of the site more precise, the unit of analysis was narrowed to include individual excavation units (EUs), small areas of excavation that are usually 1 meter by 1 meter in size(although their size does vary). Coordinates for each of the excavation units in blocks two and nine were obtained and put into a Microsoft Excel spreadsheet. The information about the ceramic sherds from the initial phase of the project was then sorted

by vessel type and excavation unit. The total number of each vessel type in each excavation unit was tallied and placed next the coordinates for that EU.

Background

The site of Vésztõ-Bikeri lies on the southeastern part of the Great Hungarian Plain in the Bekes county near the modern city of Vésztõ. During the Copper Age the site would have been near a meander of the Sebes branch of the Koros river, this meander however, was probably destroyed during the construction of the Dio-Eri canal that lies to the west of the site. Through the use of both excavation and non-destructive methods such as soil chemistry analysis and magnetomentry surveys the site of Vésztõ-Bikeri has been revealed to be a small Tiszapolgár village from the Early Copper Age (4500 BC).

Excavation at Vésztõ-Bikeri (Figure 2)

During the summers of 2000-2003 the Körös Regional Archaeological Project conducted field school excavations at the site. Over the course of the four years the site had nine separate blocks excavated. The first four blocks originated as two by two meter test pits and were originally excavated before any megnetometric surveys were conducted, their location was decided upon based on the surface collection. Blocks five, six, seven, eight, and nine, were excavated following the megnetometric surveys with the decision for their locations being based on by anomalous features from the survey read outs.

Block 1.

Block one was opened as a two by two meter test pit in 2000. The pit seemed to have been opened into a structure as part of a wall was identified. Block one, however, was never opened further.

Block 2.

Block two was originally excavated as a test pit in 2000. While excavating the test pit for block two a thick layer of burnt daub was exposed which seemed to indicate the presence of a structure. In subsequent years the block was expanded to reveal the wall trenches of a large rectangular structure that is believed to have been a house. The Structure in Block Two was not completely excavated. The Structure in Block Two was composed of features four and fourteen. The western wall of the structure was located at the 664105 easting line, the eastern wall was not found, but was most likely located beyond the 664115 easting line. The portion or the northern wall that was excavated was located on the 439491 northing and stretched from the 664105 easting to the 664115 line. The south wall was located on the 434983 northing line and was uncovered as far east as the 664111 easting line. There was a large square section of the block that was not excavated that was located at the 434987 to the 434983 northing lines and the 664111 to the 664115 easting lines.

Block 3.

Much like Blocks One and Two Block Three also started as a two by two meter test pit. Block three, like the other blocks also seemed to indicate a structure, and like Block Two it was also expanded in later years. Further excavations in Block Three revealed some wall trenches, however, an entire living floor could not be distinguished.

Block 4.

Excavated as a two by two meter test pit block four seemed to have been located in a midden area. New spatial analysis data, however, calls into question the idea that block four was a midden and not part of a structure.

Block 5.

Located at the northern edge of the site block five was a long (ten by two meter) trench that was excavated to investigate the rings found on the magnetometry that circle the site. Excavations indicate that the rings were a series of defensive ditches and palisades, which upon excavation were reveled to have been filled in when the site was abandon leaving a "ring midden" around the site.

Block 6

Block Six was excavated as a fifteen by one meter trench on the eastern edge of the site to investigate the rings found on the magnetometry. The excavation of block six also contained a midden in the former ditches and palisades.

Block 7.

Block seven was opened as a large block twenty by ten meters to investigate a larger swath of the circular rings around the site. Not only were the portions of the ditches and palisades contained within block seven middens like those in blocks five and six, but there was also a sheet midden.

Block 8.

Block eight was opened to investigate a large circular anomaly discovered by the magnetometry. The anomaly was determined to have been a pit that contained two possible kilns.

Block 9.

Block nine was excavated to investigate a rectangular structure that bordered that in Block Two. Four wall trenches were exposed, including one that was shared with the structure in Block Two. The structure, believed to have been a house from block nine was

not burnt like all other Tiszapolgár dwellings. The structure excavated in Block Nine was feature fifteen; it was a rectangular structure that fifteen meters long form west to east. The western wall was uncovered at the 664090 easting long, the eastern wall at the 664105 easting line. The structure was also eight meters from north to south from the 439483 northing line to the 439491 line.

During the mid 20th century, the Hungarian government undertook a large scale surveying project across the country. As a result from the survey the nation was grided off by meters. Lines that go west to east are called northings, for they display how far north from the original point they are. Lines that stretch from south to north are called eastings because they display the measurement of how far east from the original point they are. . The KRAP project used the national grid created during the Hungarian surveys to map their site. The coordinates of the EUs and the vessel type totals were entered into Microsoft Excel and were then placed onto bubble charts to create maps of the blocks that illustrate the distribution of potential clusters of vessels. Both blocks two and nine are roughly rectangular. Block Two extends from the northing of N 439483 in the south to N 439491 in the north and from the easting of E 664102 to the line E664111 in the east. There is, however, an extension excavated from N 439487.5 to N 439490 and E 664111 to E 664115 in the northeastern corner of block two. Block Nine was excavated from N 439484 to N 439490 and E 664091 to E 664101. (Figure 3) From here on, all northing lines will be referred to by the last two digits and the easting lines by the last three as these are all that change within the two blocks.

The classification system for ceramic vessel types for the Tiszapolgár culture was created by Ida Bognár-Kutzián during her systematic examination of sites in the

Carpathian Basin, in particular the site of the Cemetery of Tiszapolgár Basatanya. Bognár-Kutzián's classification system includes sixteen vessel types, most of which encompass multiple variants. For simplicity's sake, the classification system was modified by Dr. Parkinson for use by the Körös Regional Archaeological Project. Dr. Parkinson's system includes fifteen vessel types with no variants. Both systems of classification, Bognár-Kutzián's and the one used by the KRAP project are based on the analysis done by Bognár-Kutzián from the vessels found at the site of Tiszapolgár Basatanya. It is important to note that the vessels were not found in a use context, but rather as part of burials. It should also be noted that because the vessels were not found where they were used the typology was created based on the vessels' appearance and analogies to vessels of other cultures.

Vessel Types (Figure 4)

Altars- Altars are large flat rectangular vessels with feet. The function of altars is not known. It has been suggested that they might have been used much like griddles, though it is usually accepted that they were used as ceremonial vessels (Bognár-Kutzián 1963).

Bowls- Though all Tiszapolgár bowls are round, they do vary in size and shape. Bowls may differ in diameter and depth, as they range from small shallow bowls to large deep ones. A few bowls may even have bulges in the center (Bognár-Kutzián 1963, 1972). There are two probable functions of the bowls: short-term storage of dry goods and platforms to be eaten off of (Rice 1987 Michelaki 1999).

Cups- Early Copper Age cups were generally either rounded, nearly hemispheric, or cone shaped. It is usually claimed that the cups were used as scoops (Bognár-Kutzián 1963,

1972), but it has been suggested that they were also used as drinking vessels (Gyucha 2005).

Dippers- The dippers are shaped like large spoons, with a protrusion attached to a round bowl-shaped depression. Bognár-Kutzián has postulated that dippers were used to scoop or ladle goods from large storage jars (1963).

Globular Shaped Vessels- Much as their name implies, globular vessels were large globe-shaped vessels. The function of these vessels in not known, however, due to their relatively finer craftsmanship and rarity when compared to other vessel types, they are considered to have been ceremonial (Bognár-Kutzián 1963, 1972).

Jars- Jars are medium-sized vessels that encompass a wide range of shapes, but usually feature slightly restricted necks. Often the jars feature pierced protrusions, called lugs, near the rim. It has been argued that these lugs functioned to ease the tying-on of lids. It is suspected that the jars were used for transportation or short-term storage of both wet and dry goods (Bognár-Kutzián 1963, 1972; Michelaki 1999).

Jugs- Like jars, jugs are also medium-sized vessels, though they all have much more highly restricted necks. It has been noted that many of the jugs resemble the milk jugs of later cultures. Tiszapolgár jugs were thought to have been used for the storage and transportation of liquids (Bognár-Kutzián 1963, 1972).

Large closed-mouthed pedestal-based vessels- The large closed-mouthed pedestal-based vessels resemble the jars. There are certain differences between the large closed-mouthed pedestal-based vessels and regular jars, though. They are frequently more finely made and feature decorations. The most significant difference, however, is the presence of a conical or cylindrical pedestal attached to the bottom of the vessel. The function of

the vessels is not known. It has been suggested that the pedestals are placed in a fire to warm the rest of the vessel, however, based on the fact that they are usually very finely made and rarely exhibit any evidence of being placed on the fire this is unlikely (Yerkes 2005). It is possible that these vessels had a ceremonial function (Bognár-Kutzián 1963, 1972).

Large open-mouthed pedestal-based bowls- The large open-mouthed pedestal-based bowls are as similar to bowls as the large closed-mouthed pedestal-based vessels are to jars. They too resemble finely made bowls, frequently with decoration, perched upon a cylindrical or conical pedestal. It is not know what function these vessels served (Bognár-Kutzián 1963, 1972).

Lids- Lids were generally inverted conical vessels. It is suspected that the lids were used to cover vessels. Many in fact have knobs on the top, which seem to have been used to help in tying them down (Bognár-Kutzián 1963, 1972).

Pots- The pots were larger open-mouthed vessels. Pots were generally slightly conical with a bulge toward the midpoint. The function of pots is suspected have been for the use in cooking (Bognár-Kutzián 1963, 1972; Rice 1987; Michelaki 1999).

Rectangular Vessels- Rectangular vessels were medium-sized vessels shaped like a rectangle. Unlike the altars, rectangular vessels were usually taller and narrower. They also do not necessarily have feet. Much like the altars, the function of the rectangular vessels is not known (Bognár-Kutzián 1963, 1972).

Small open pedestal-based vessels- The small open pedestal-based vessels resemble finely made, highly decorated, wide-mouthed cups sitting on cylindrical or conical

pedestals. As with the other pedestal-based vessels, the function of the small open pedestal-based vessels is not known (Bognár-Kutzián 1963, 1972).

Storage vessels- Storage vessels are generally very large crudely made vessels that slightly resemble jars in shape. Other than their size, the main characteristics of the storage vessels are their constricted necks, thick coarse sides, and handles that are present on the sides. It is believed that the storage vessels were used, as their name implies, to store goods (Bognár-Kutzián 1963, 1972; Rice 1987).

Strainers- Strainers were smaller vessels with that featured holes. It is believed that they were used for sorting and straining grain (Bognár-Kutzián 1963).

Results

The t-test that was preformed yielded information as to which of the vessel types occurred in a block in a higher than expected proportion in each block. By determining the distribution of the vessel types across the site, patterns of use could possibly be illuminated. Following analysis at the block level, the scope of the project was narrowed to focus specifically on blocks two and nine. For blocks two and nine, the distribution of the vessel types within the blocks was compared.

Block One- (Table 2) In Block one, there is significant deviation in the percentages of bowls, cups, globular vessels, jugs, large closed-mouthed pedestal-based vessels, large open pedestal-based bowls, rectangular vessels, and small open pedestal-based vessels. The cup, jug, and rectangular vessels are significant for Block one due to their absence.

Block Two- (Table 3) Block two contains three vessels with a significantly higher percentage than expected: the jug, large closed-mouthed pedestal-based vessel, and the rectangular vessel.

Block Three- (Table 4)For Block 3 there are significantly higher percentages of altars, dippers, jugs, large open pedestal-based bowls, pots, and rectangular vessels than expected. Block 3 also features a significantly lower than expected percentage of jars.

Block Four- (Table 5)Five vessel types in Block 4 have a significantly higher than expected percentage: globular vessels, jugs, large open pedestal-based bowls, pots, and strainers. There are two vessels in Block four with significantly lower than expected percentages: jars and lids.

Block Five- (Table 6) In Block five, cups and storage vessels have a significantly higher than expected percentage, while bowls, jugs, large open pedestal-based bowls, lids, pots, and rectangular vessels are of a significantly lower percentage than expected.

Block six- (Table 7) Block six exhibits a significantly higher than expected percentage in bowls and jars. Lower than expected percentages in Block six occur with the jugs, large open pedestal-based bowls, lids, pots, and rectangular vessels.

Block Seven- (Table 8) Block seven has significantly higher than expected percentages of jars, lids, and rectangular vessels. No vessel in Block seven has a significantly lower than expected percentage.

Block Eight- (Table 9) In Block 8 there are significantly higher than expected percentages of dippers, and lids. Significantly lower than expected percentages occur with the jugs, large open pedestal-based bowls, and rectangular vessels in Block 8.

Block Nine- (Table 10**)** Block 9 had significantly higher than expected percentages in altars, dippers, and large closed-mouthed pedestal-based vessels.

Distribution within Block Two and Block Nine

Altars

The altars in block two appear to be relatively evenly spread out across the block. There does not appear to be any sort of cluster that would indicate an area in the block in which altars were used to any greater degree than any other area. (Chart 1)

The altar was one of the vessel types that occurred in Block nine in a higher than expected number. All of the altars, with the expectation of one, occur in a four by six meter rectangle in the north western corner of the block. There is a possible cluster in the two by one meter rectangle in the northwestern corner of the block. (Chart 2)

Bowls

Nearly all of block Two is saturated with bowls. The areas there are three nodes of bowl concentration in the block Two. There is a two by three meter rectangular area north of the unexcavated area that that has high a high concentration. In the south western corner as well there is a large concentration. The highest number of bowl sherds, and the EU with the highest total sherd count on the entire site, is found at 111 easting line and 97 northing, at the north western corner of the unexcavated square. (Chart 3)

There are bowls found in nearly all of block Nine. The highest concentration of bowls extends the length of the structure, north to south, in a two meter wide band from 101 east to 103 east. With the exception of the corners there are no sherds found along the eastern wall. The southern wall of the structure has elevated concentrations, as does the northwestern corner. (Chart 4)

Cups

There are two areas of particularly high concentrations of cups in block Two. The first area is the most of the 111 line, with higher frequencies in the north eastern corner of the excavated area. There is another cluster at the south western corner. There is a large

gap where there are no cups found that begins at the 105 line and extends to the 111 line and from the northern boarder to within a meter of the southern wall. (Chart 5)

Block nine has an extremely high concentration of cups on the 101 line east that extends south with diminishing density. The southern boarder also has a high concentration extending west form the eastern edge six meters. Like block two, block nine also has a gap where there are no cups. The gap existed as a four by four meter square toward the center of the block from 88 to 90 north and 093 to 097 east. As with the bowls the eastern wall is largely void of cups. (Chart 6)

Dippers

Half of the dippers present in block Two occur in a 1.5-by-2.5 meter area two meters south of the northwestern corner of the block. The rest of the dippers appear in the north eastern corner of the excavated portion of the. block. (Chart 7)

In Block Nine, the dipper was one of the vessels that occurred in higher numbers than expected. The majority of the dippers in the block are found along the eastern edge of the block in an area two meters wide. Behind the two-meter mark from the eastern edge, the dippers appear in regular intervals of one in per excavation unit every two meters, though only along the northern and southern walls. They disappear from the center of the block. (Chart 8)

Globular Vessels

While there was a globular vessel found in block two it occurred in the structure that is mostly contained in Block Nine.

There was also only one globular vessel found in block nine. In block nine the globular vessel was found on the northern edge of the block and roughly two meters east

of the western edge. The globular vessel from Block Two was found a half a meter west of the eastern wall of Block Nine's structure on the 89.5 easting. (Chart 9)

Jars

In block two there are three areas of concentration of jars. The eastern edge of the block contains a large cluster in the northeastern corner of the excavated area and in the center at 87 north along two meters from the eastern edge of 111 west. There is also large cluster in southwestern corner east that extends north for three meters. There seems to be a relatively even distribution of jars in the center and along the northern and southern walls of the structure (Chart 10)

Block nine contains a relatively even distribution of jars. There is, however, a high concentration of jars along the eastern edge of the block, especially in the southeastern corner. Other areas of high concentration include a cluster of five in the northwestern corner of the block. The majority of the EUs contained more than one jar sherd. As with the majority of the other vessel types the eastern wall is absent of jars. (Chart 11)

Jugs

Block two contained a higher than expected number of jugs. Unlike the rest of vessels few of the jugs were found along the edges of block two, there is however a small cluster at the center of the eastern edge of the excavated area at 087 north. There is also a cluster in the southwestern corner. Jars in block two appear to be relatively evenly distributed in the center of the block. (Chat 12)

Most of the jugs in block nine were found two meters away from the southeastern and western corners. There do not appear to have been any specific clusters. (Chart 13)

Large closed-mouthed pedestal-based vessels

One of the two large closed-mouthed pedestal-based vessels was found in block two. It was uncovered one and a half meters south and three-and-a-half meters west of the northeastern corner. (Chart 14)

The second of the large closed-mouthed pedestal-based vessel was excavated in block nine. Block Nine's large closed-mouthed pedestal-based vessel was found along the northern wall five meters east of the western edge of the block. (Chart 14)

Large open-mouthed pedestal-based bowls

There are a few large open-mouthed pedestal based bowls along the western wall. The majority of the large open mouthed pedestal based bowls appear to have been scattered throughout the center of the block. . (Chart 15)

The majority of the large open mouthed pedestal based bowls in block Nine were located scattered north to south along the 102 east and 103 east lines. None of the vessels were found along any of the walls. (Chart 16)

Lids

In Block Two there were no clusters of lids. The lids appear scattered along the walls of the structure. (Chart 17)

There is a scatter of lids from the 101 east line to the eastern wall. There is an even distribution of lids in a two-meter by four-meter block along the southern wall two meters east of the western edge. The largest cluster of lids from either block was found toward the center of Block Nine on the 099 east line four meters north of the southern wall. . (Chart 18)

Pots

The is a high density of pots in the western half of block two meters from the western wall to the 107 east line, with especially high concentrations in the northwestern corner.. Behind the eastern half there is a noticeable lack of vessels in an area that extends from the north to the south borders and three and half meters to the east in the center of the block, from the 107.5 to 111 easting. In a two by two meter square, north of the unexcavated area in the north eastern corner of the block there is any area of extremely high density of pots. (Chart 19)

In Block Nine there is extremely high frequency of pots along the 103 easting that extends the length of the block north to south. There are high densities at the 101 and 099 easting lines on the 86 northing. . The are two clusters occur in both the north and south corners along the western wall. The cluster in the north is isolated in the corner, while the one in the south stretches four meters to the east. (Chart 20)

Rectangular vessels

There was a larger than expected number of rectangular-shaped vessels found in block two. The vessels, however, do not appear to have any clusters. The rectangular vessels in Block Two appear to be relatively evenly scattered (Chart 21)

Much like in Block Two, the rectangular shaped vessels do not appear to follow any pattern in block nine. The rectangular vessels in block nine appear scattered across the block. (Chart 22)

Storage Vessels

There are three clusters of storage vessels in Block Two. The first cluster was found in the southwestern corner. In the north eastern corner of the excavated area was a second cluster. The third cluster was uncovered on the 87 easting line by the south

western corner of the unexcavated area. With the exception of these three areas the entirety of Block Two is completely void of storage vessels. . (Chart 23)

Block nine also has three areas of concentration. The largest concentration of storage vessels occurs on the eastern edge of the block two meters south from the northern wall. The second area is a two-meter stretch along the southern wall that starts two meters west of the block's eastern boarder. There is also a cluster in the north eastern corner of the structure. (Chart 24)

Strainers

There was only one strainer found in either block two or nine. The strainer was found on the southern edge of the block at the 109 easting in block two. (Chart 25)

Analysis

The t-test revealed that all of the blocks had different proportional distributions of ceramic vessel types. It should be expected that at least half of the blocks would yield different proportions from the rest. Blocks four, five, six, seven, and eight all contained parts of middens. As there was no living surface associated with any of the middens, it is not known from where in the site the ceramics found in them originated. It is also most likely that the middens were filled shortly before the abandonment of the site, thus there is little that they can reveal about use patterns at the site during its occupation. The structures from blocks one, two, three, and nine also differed in distribution. A possibility for the differentiation between the blocks with structures is that each structure had a different function. The difference is distributions between the middens and the structures seems to indicate that the structures were not being used as trash heaps prior to their

destruction. The structures in blocks two and nine, however, very closely resemble one another in both physical shape and ceramic vessel type distribution.

Because of their resemblance to one another, blocks two and nine were more closely examined using the individually dug excavation units. By analyzing the blocks by each EU, it is hoped that vessel type use patterns could be distinguished both in and between the two.

Block 2

There seems to be a basic pattern to most of the vessel distribution in block two. There are three areas that generally feature large clusters of ceramics. The 117 line east, usually above the 087-line north has a high number of vessels. The rectangle above the unexcavated area from the east line 112 to 115 and north from 088 to 090 is typically the area with the most densely packed ceramics. Third among the clusters is the area from east line 105 to 107 in the southwestern corner of the structure.

All of the most commonly found vessel types (those with over a hundred sherds in the block) Bowls, cups, jars, and pots are close to conforming to this pattern. Bowls and cups conform to the pattern most firmly, jars are absent from the bottom half of the rectangle above the unexcavated area from 113 to 115 east and 88 to 90 north, the pots however, to not have a large cluster in the southwestern corner.. To a lesser extent the jugs nearly fit the pattern, there is a small cluster at the 105 line east and at the 111 east 87 line north, however, they are absent from the rectangle above the unexcavated in the northeastern boarder of the site. There is a possibility that the bowl, cup, jar, pot combination represents the most basic of ceramic assemblages, as they are the most utilitarian of the ceramics. With these four vessels, there would be few things that one

could not do. The combination would provide its owner with vessels for eating and drinking: the bowl and cup, storage: the jar, and cooking: the pot. To some extent the rectangular vessels follow the pattern. Most the of other vessel types have no distinguishable pattern, expect that they are usually found along the 105 east line.

The storage vessels have an interesting pattern. They are found in the corners of the excavated section of the structure, all are along the walls. The pattern of the storage vessels seems to indicate that due to their large size they were all kept bunches along the walls out of the way. For block two it seems that it would be possible for food preparation to have taken place in the southwestern corner of the block at 105 to 107 east and 83 to 85 north and the rectangle above the unexcavated area of 113 to 115 east and 88 to 90 north. It should be noted that the lids and dippers which were found by Bognár-Kutzián to be related to the storage vessel (1963, 1972) do not seem to occur in greater numbers in the area of the storage vessel. In fact, the dippers and lids do not appear to occur most frequently in areas in which there are vessels that would need to be covered or have items scooped out.

Block Nine

The most basic pattern of distribution in block nine is that the ceramics were found along the walls, with the exception of the west wall where only a very few vessels were uncovered. Block Nine is interesting in that there are not really any vessels to occurring on the east or west walls of the site. The south wall at 84 north also features high numbers of ceramics. With the exception of the altar, large open pedestal-based bowl, and the rectangular vessels, all of the vessel types that occurred more then once are found with the highest concentrations on the walls, but have relatively even distribution

through out the middle of the block. Much like in block two, the bowls, cups, jars, and pots generally occur in the same locations. Despite generally occurring in higher concentrations along the near the east and on south walls, as compared to the rest of the bock, the main clusters of the bowl, cup, jar, pot groups of vessels do not necessarily occur at the same coordinates. The highest concentration of bowls is in the bottom half of the block two meters west the east wall at the 103 easting, while the cups occurred more frequently in the top half. Despite the fact that there are different nodes of concentration for cups and bowls along the 103 easting line, both are still found in elevated frequencies there, which strongly suggest that they are associated. To further the evidence that at least the bowls, jars and pots were associated is the fact that each one has a cluster in the northwest corner at approximately 091 east and 490 north. As with block two, I suspect that the bowls, cups, jars, and pots were used for food production and serve as the basic unit of ceramic vessels in the Tiszapolgár home. The pattern of the dipper resembles that of the main vessel types, except that only one was found off of the walls west of the 099 line east. The main cluster of the dippers is within two meters of the southeast corner and is at the same location as that of the bowls in this area. It is possible that despite Bognár-Kutzián's findings that the dippers were associated with storage vessels, this is not the case in these houses as neither has evidence that would associate the two. Perhaps dippers were used in food preparation with the bowls, as block nine would indicate. Much the same as in block two, the lids in block nine do not seem to be specifically associated with any vessel that would need a lid. Storage vessels follow a pattern similar to that of the bowl, cup, jar, and pot group, except that they are less scattered in the center. The main clusters of the storage vessels are two meters south of the north wall on

the 101 easting, in the northeastern corner, two meters west of the east boarder along the south wall. It would be possible that the inhabitants of the house in block nine had their storage areas away from the corners of the house. The altars display an interesting pattern. All save for one were found west of the 095 east line, with a cluster in the north eastern corner. It is possible that the there was a ceremonial area in the southwestern corner. The rest of the vessels occurred in numbers to few to make speculations about their use patterns.

Patterns between blocks two and nine.

The types of vessels that are found together are generally the same in both blocks. There seems to have been a consistent bowl, cup, jar, pot, grouping in both blocks. It is possible that the frequent occurrence of the bowl, cup, jar, and pot group in both blocks indicated that they formed a unit of vessel type grouping. This group represents all that would be needed for basic food preparation.

It is unfortunate, but other than the fact that the majority of the ceramics were found along the borders of the block, there do not seem to be areas of the blocks that served the same function. The main clusters in block two occur in different areas than those in block nine. It might be possible that between the occupations of the blocks that food preparation shifted from along the walls in block nine to the corners as in block two. The single globular vessels found in each block are an interesting case. While the vessels were found in relatively the same location in both blocks, they were also found near clusters of altars. The globular vessels were found on the 105.5 line east and the 89.5 line north, very close to a group of altar fragments found on and around the same area and at 093 east and 89.92 north.. The presence of altars in the area of both vessels could indicate

that this was a ceremonial area. There did not appear to have been any similarities as to areas that were used for the same purpose between the blocks.

Things to consider when comparing the blocks

There are a number of factors that must be taken into consideration when examining the blocks. These factors include contextual issues of artifact location and measurement issues.

Neither of the blocks was subject to a catastrophic event that would have immediately covered the site exactly as it was used, thus it would be unwise to assume that all of the vessel sherds were found in their original context. It is known that the Tiszapolgár people would knock down their houses when they were finished with them and light the rubble on fire. The KRAP directors are fairly certain this was the fate of block two, as it contained an extremely high concentration of burnt daub just above the floor layer. (Parkinson, Gyucha, Yerkes 2002, Parkinson 2002) It should not be assumed that the people who lived in block two would have left all of their good ceramics in the house when knocking it down and burning it. Block nine differs slightly from block two in that the structure does not appear to have been burnt, as there was a layer of un-burnt daub above the floor surface. However it is believed that the structure was deliberately knocked down (Parkinson 2003). Once again, it is unlikely that the inhabitants would have left useful vessels in the house when destroying it.

There has been much research that indicates that sites upon excavation are extremely different from how they existed when in use. Depositional forces often shift the location of artifacts overtime (Schiffer 1995, Binford 1979). It has also been documented that rarely are items found where they were used due to movement of the

objects by people (Binford 1978). The location of a cluster of ceramics could indicate that they were simply being stored in that location, or perhaps that they were broken pre-position and were swept out of the way by the inhabitants (Deal 1985). It is also possible that the houses were used as middens before they were knocked down in order to remove broken objects from the rest of the site.

Just as there are contextual factors that must be considered, there are a number of measurement issues to contend with. The most important issue that must be reckoned with is the fact that this project is measuring the number of sherds and not individual vessels. While it is probable that a higher number of sherds in an area would mean that there was a high number of vessels in that area too, this might not always be the case. It is possible that clusters do not necessarily represent a higher number of vessels, but merely ones that were shattered into more pieces. Larger vessels would be more likely to leave more sherds and could possibly be over-represented in the archaeological record. The fact that larger vessels can break into more pieces than smaller ones does not, however, seem to play any role at Vésztõ-Bikeri as there were nearly twice as many bowl sherds found than all of the other vessel types combined even though bowls were one of the smaller vessel types.

Another factor that must be considered is the fact that the excavation units were plotted based on their center coordinates which could possibly mean that ceramics that appear to have been found in the same location were a meter or more apart. Equally troubling is the fact that the two blocks were excavated differently. Where block two used mostly one by one meter excavation unites, block nine was excavated in two by two meter excavation units. This discrepancy would mean that there is a high density of

ceramic sherds in each block nine excavation unit than there is in block Two. The problem with the excavation unites being plotted by their center coordinates and that the blocks were excavated using different sized units, however, can not be fixed as the individual sherds were mapped to exact locations within each excavation unit.

Conclusion

I have attempted to determine whether or not there were any use patterns of ceramic vessel types through the use of spatial analysis. Based on the different positions of the ceramics between the two blocks that I examined, there does not appear to be any areas of houses that were consistently used by the Tiszapolgár people. It does appear that there are places within each block that served certain functions. It is my belief that, based on the fact that bowls, cups jars, and pots, frequently occurred in high numbers together, they formed a basic unit of ceramic vessels at the site of Vésztõ-Bikeri. Aside from this apparent correlation, there are few conclusions that can be drawn from the ceramic distribution patterns of blocks two and nine at the site of Vésztõ-Bikeri, Hungary. Future research will be conducted using a more precise mapping system like Arc GIS. It is likely that not all of the vessels were used for the function believed for that type. For future research I will examine the physical characteristics, thickness, surface treatment, rim diameter, and decoration the vessels found to determine if there are vessels that do not appear to have been used for their accepted function and try to determine if there are any patterns of use for these vessels.

Works Cited-

Binford, Lewis 1979 "Organization and Formation Processes: looking at curated technologies". *Journal of Anthropological Research* vol. 35 n.3.

Binford, Lewis. 1978. "Dimensional Analysis of Behavior and Site Structure: Learning from an Eskimo Hunting Stand." *American Antiquity.* Vol.3 n.3.

Bognar-Kutzián, 1963.Ida. *The Copper Age Cemetery of Tiszapolgár-Basatanya.* Budapest, Akadémiai Kiadó.

Bognar-Kutzián, Ida. 1972. *The Early Copper Age Tiszapolgár Culture in the Carpathian Basin*. Budapest, Akadémiai Kiadó.

Deal, Michael "1985 Household Pottery Disposal in the Maya Highlands: An Ethnoarchaeological Interpretation*".* *Journal of Anthropological Archaeology* vol.4:

Gyucha, Attila. 2005. Personal Correspondence

Michelaki, Kostalena. 1999. *Household Ceramic Economies: Production and Consumption of Household Ceramics Among the Marcos Villagers of Bronze Age Hungary*. Ph.D.dissertation, Department of Anthropology, University of Michigan.

Parkinson, William, 2002. 2002 Field School Session Write up.KRAP webpage- www.anthro.fsu/research.koros/fieldschool/field2001/field2002.html

Parkinson, William, 2003Field School Session Write up. KRAP webpage- www.anthro.fsu/research.koros/fieldschool/field2001/field2003.html

Parkinson, William, Attila Gyucha, and Richard Yerkes. 2001. "The Körös Regional Archaeological Project Excavations at Vésztõ-Bikeri, an Early Copper Age Settlement in Southeastern Hungary." Paper presented in a symposium entitled The Neolithic in Europe, the Levant, and Asia, Alan Simmons, Chair, the Society for American Archaeology 66th Annual Meeting, New Orleans, Louisiana, April 19, 2001.

Parkinson, William, Attila Gyucha, and Richard Yerkes. 2002. "The Körös Regional Archaeological Project: A Preliminary Report on the 2000-2001 Excavations at Vésztõ-Bikeri and Körösladány-Bikeri." Paper presented in a symposium entitled The End of the Neolithic in the Carpathian Basin: The Körös Regional Archaeological Project, 2001, organized and chaired by W. A. Parkinson, at the 67th Annual Meetings of the Society for American Archaeology, Adams Mark Hotel, Denver, CO, Saturday, March 23, 2002.

Parkinson, William, Yerkes, Richard, Gyucha Attila. 2004 "The Transition to the Copper Age on the Great Hungarian Plain: The Koros Regional Archaeological Project Excavations at Vésztõ-Bikeri and Körösladány Hungary, 2000-2004." *Journal of Field Archaeology*.Vol 29 n. 1&2.

Parkinson, William, Yerkes, Richard, Gyucha Attila. Hardy, Meredith. Morris, Margaret. 2004 *Settlement Reorganization at the End of the Neolithic: Resent Research in the Koros River Valley, Southeastern Hungary.* Journal of Eurasian Prehistory. Vol. 2 n.2.

Parkinson, William. 1999. *The Social Organization of Early Copper Age Tribes on the Great Hungarian Plain.* Ph.D. Thesis. University of Michigan, Ann Arbor.

Parkinson, William. 2000. "Style and Social Interaction in the Early Copper Age of the Great Hungarian Plain." La Tinaja: A Newsletter of Archaeological Ceramics. Vol. 13 n.1.

Rice, Prudence. 1987. *Pottery Analysis: A Sourcebook* . Chicago, University of Chicago Press.

Schiffer, Brian. 1987. *Formation Processes of the Historical Record* from "Learning from Things" Ed. Kingry. David. Smithsonian Institution Press. Washington.

Yerkes, Richard. 2005 Personal Correspondence

Figures, Tables and Charts.

Figure 1. Map of the Carpathian Basin in central and SE Europe (inset). The Great Hungarian Plain is east of the Danube. The KRAP study area is just west of the town of Vésztő

.

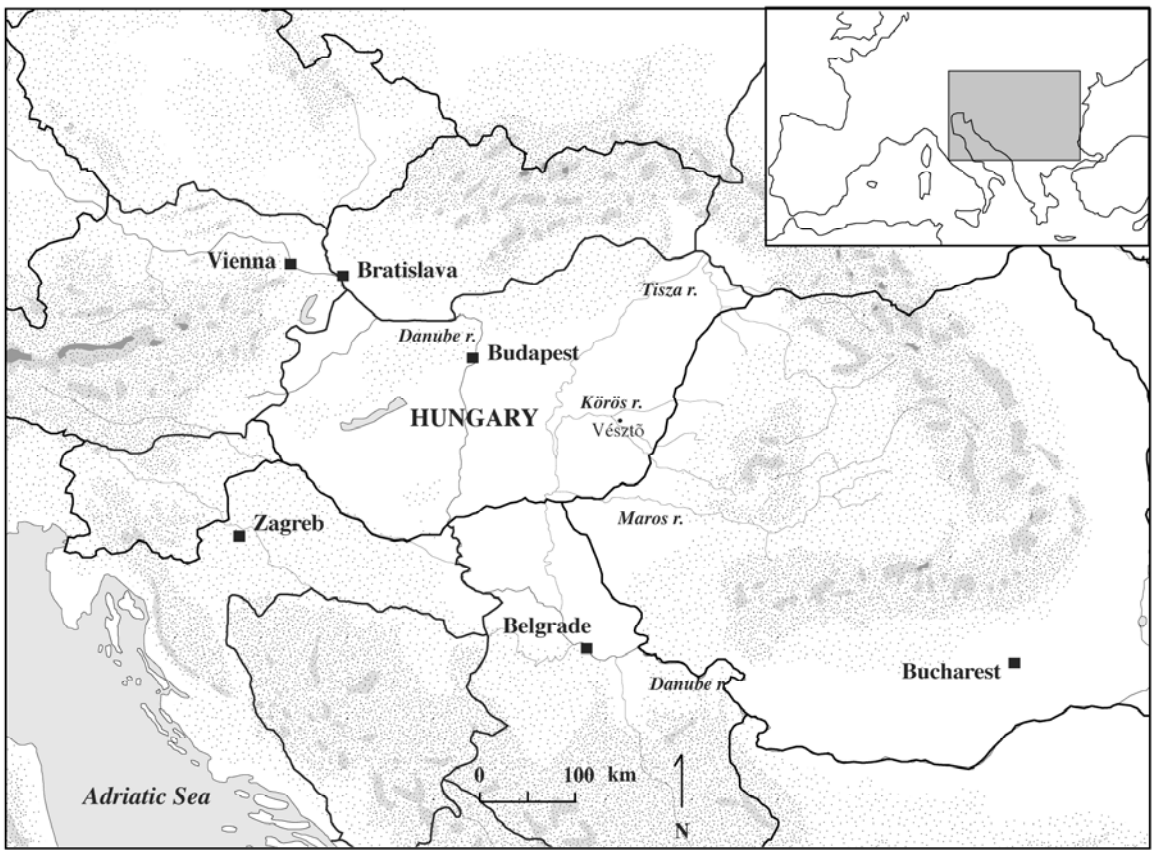


Figure 2. Map of the Site of Vésztõ-Bikeri.

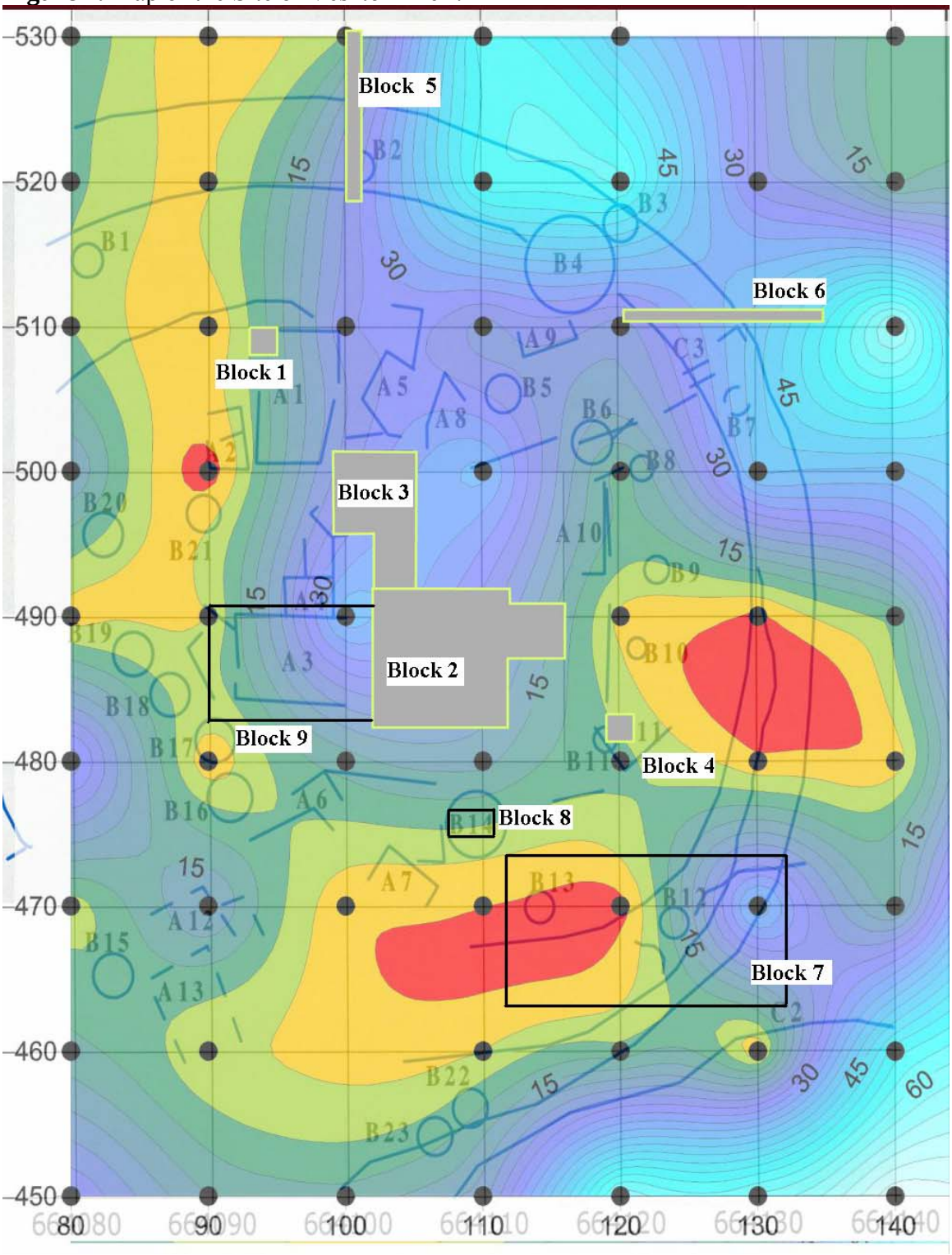
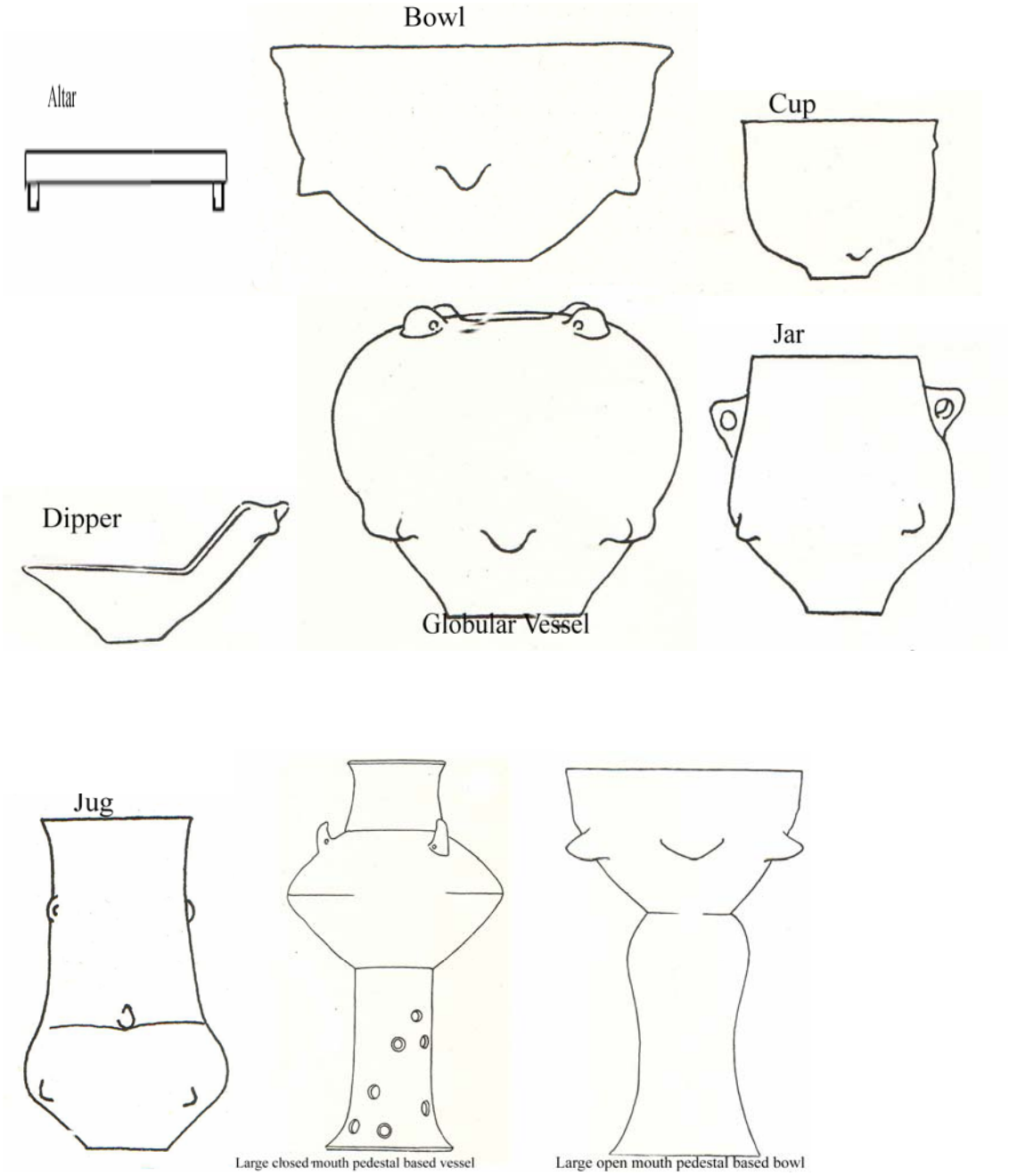


Figure 3. View of the wall trenches in Blocks Two and Nine (From the West)

Excavated wall trenches of large Early Copper Age structure at the Vésztő-Bikeri site, Hungary.

Figure 4. Vessel types found at Vésztõ-Bikeri.



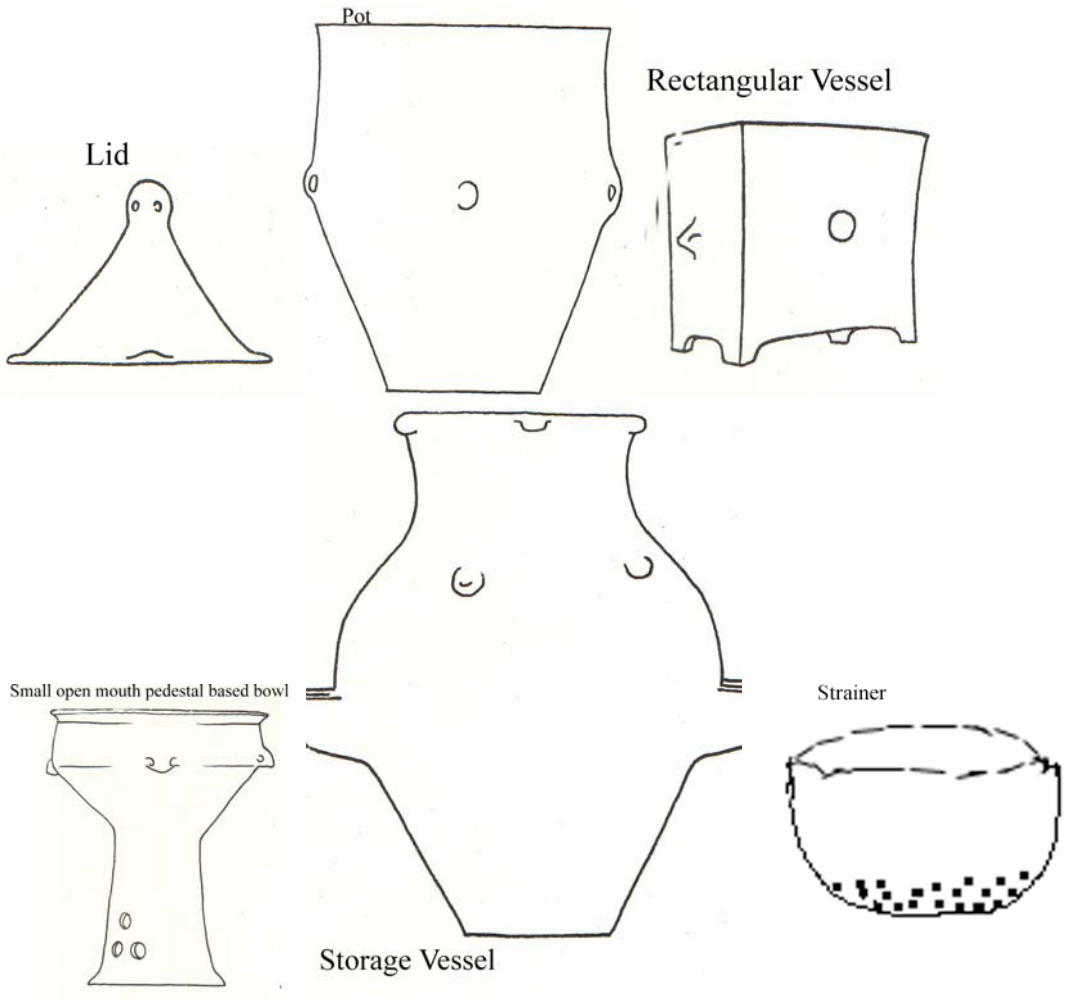

Pot
Rectangular Vessel
Lid
Small open mouth pedestal based bowl
Strainer
Storage Vessel

***Table 1**: Pottery Type and Total Percent for the entire site*

Pottery Type	TOTALS	PERCENT OF TOTAL	Avg. Percent
Alter	47	0.735064123	0.383547
Bowl	3181	49.74976541	49.69686
Cup	824	12.88708164	17.90892
Dipper	71	1.110416015	0.704962
Globular	6	0.093837973	0.304167
Jar	403	6.30278386	6.513386
Jug	62	0.969659055	0.505742
Large-Closed	2	0.031279324	0.012171
Large-Open	34	0.531748514	0.478206
Lid	48	0.750703785	0.784603
Pot	1503	23.50641226	18.57556
Rectangular	50	0.781983109	0.432326
Small-Open	8	0.125117297	0.24438
Storage	151	2.36158899	3.294037
Strainer	4	0.062558649	0.161138
Total	6394		

Table 2:

BLOCK	INTRABLOCK PERCENTAGES	t-test result	Significant?	TOTALS
Block 1				
Alter	0	-2.14019	no	0
Bowl	64.63415	3.006371	yes	53
Cup	0	-3.15757	yes	0
Dipper	0	-2.19127	no	0
Globular	1.219512	4.776056	yes	1
Jar	4.878049	-1.63787	no	4
Jug	0	-2.76709	yes	0
Large-Closed	0	-1.46005	no	0
Large-Open	1.219512	4.814498	yes	1
Lid	1.219512	1.536855	no	1
Pot	25.60976	1.916286	no	21
Rectangular	0	-2.69297	yes	0
Small-Open	1.219512	7.176291	yes	1
Storage	0	-1.86912	no	0
Strainer	0	-1.03305	no	0
Total	100			82

Table 3:

Block 2				
Alter	0.334308	-0.27475	no	8

Bowl	53.2804	0.721246	no	1275
Cup	9.444212	-1.49244	no	226
Dipper	0.334308	-1.15212	no	8
Globular	0.041789	-1.36903	no	1
Jar	6.101128	-0.4129	no	146
Jug	1.253656	4.092106	yes	30
Large-Closed	0.041789	3.552955	yes	1
Large-Open	0.501463	0.151042	no	12
Lid	0.543251	-0.85287	no	13
Pot	25.07313	1.770096	no	600
Rectangular	0.87756	2.773368	yes	21
Small-Open	0	-1.79847	no	0
Storage	2.131216	-0.65981	no	51
Strainer	0.041789	-0.76515	no	1
Total	100			2393

Table 4:

Block 3				
Alter	1.427498	5.825251	yes	19
Bowl	51.69046	0.401244	no	688
Cup	8.64012	-1.63421	no	115
Dipper	1.878287	3.647101	yes	25
Globular	0	-1.58707	no	0
Jar	4.0571	-2.46008	yes	54
Jug	1.277235	4.221113	yes	17
Large-Closed	0	-1.46005	no	0
Large-Open	0.901578	2.749636	yes	12
Lid	0.225394	-1.97609	no	3
Pot	28.09917	2.594464	yes	374
Rectangular	1.126972	4.326964	yes	15
Small-Open	0.375657	0.966107	no	5
Storage	0.300526	-1.69859	no	4
Strainer	0	-1.03305	no	0
Total	100			1331

Table 5:

Block 4				
Alter	0	-2.14019	no	0
Bowl	55.86854	1.242152	no	119
Cup	4.694836	-2.32981	yes	10
Dipper	0	-2.19127	no	0
Globular	1.408451	5.761892	yes	3
Jar	0.469484	-6.05324	yes	1
Jug	0.938967	2.370328	yes	2
Large-Closed	0	-1.46005	no	0
Large-Open	0.938967	2.992465	yes	2
Lid	0	-2.77258	yes	0

Pot	33.33333	4.020377	yes	71
Rectangular	0.469484	0.231454	no	1
Small-Open	0.469484	1.656602	no	1
Storage	0	-1.86912	no	0
Strainer	1.408451	7.99651	yes	3
Total	100			213

Table 6:

Block 5				
Alter	0	-2.14019	no	0
Bowl	16.66667	-6.64786	yes	2
Cup	58.33333	7.127336	yes	7
Dipper	0	-2.19127	no	0
Globular	0	-1.58707	no	0
Jar	8.333333	1.82276	no	1
Jug	0	-2.76709	yes	0
Large-Closed	0	-1.46005	no	0
Large-Open	0	-3.10577	yes	0
Lid	0	-2.77258	yes	0
Pot	0	-5.06043	yes	0
Rectangular	0	-2.69297	yes	0
Small-Open	0	-1.79847	no	0
Storage	16.66667	7.587962	yes	2
Strainer	0	-1.03305	no	0
Total	100			12

Table 7:

Block 6				
Alter	0	-2.14019	no	0
Bowl	68.18182	3.720398	yes	15
Cup	18.18182	0.048116	no	4
Dipper	0	-2.19127	no	0
Globular	0	-1.58707	no	0
Jar	9.090909	2.581507	yes	2
Jug	0	-2.76709	yes	0
Large-Closed	0	-1.46005	no	0
Large-Open	0	-3.10577	yes	0
Lid	0	-2.77258	yes	0
Pot	4.545455	-3.82214	yes	1
Rectangular	0	-2.69297	yes	0
Small-Open	0	-1.79847	no	0
Storage	0	-1.86912	no	0
Strainer	0	-1.03305	no	0
Total	100			22

Table 8:

Block 7				
Alter	0.673854	1.619917	no	5
Bowl	45.28302	-0.88836	no	336
Cup	19.54178	0.287894	no	145
Dipper	0.134771	-1.77235	no	1
Globular	0	-1.58707	no	0
Jar	10.10782	3.599987	yes	75
Jug	0.404313	-0.55496	no	3
Large-Closed	0	-1.46005	no	0
Large-Open	0.539084	0.395375	no	4
Lid	1.48248	2.466113	yes	11
Pot	16.71159	-0.50779	no	124
Rectangular	1.078167	4.022956	yes	8
Small-Open	0.134771	-0.80665	no	1
Storage	3.908356	0.34858	no	29
Strainer	0	-1.03305	no	0
Total	100			742

Table 9:

Block 8				
Alter	0	-2.14019	no	0
Bowl	48.78049	-0.18443	no	60
Cup	22.76423	0.856052	no	28
Dipper	1.626016	2.862956	yes	2
Globular	0	-1.58707	no	0
Jar	8.130081	1.619194	no	10
Jug	0	-2.76709	yes	0
Large-Closed	0	-1.46005	no	0
Large-Open	0	-3.10577	yes	0
Lid	2.439024	5.846289	yes	3
Pot	13.82114	-1.29522	no	17
Rectangular	0	-2.69297	yes	0
Small-Open	0	-1.79847	no	0
Storage	2.439024	-0.48516	no	3
Strainer	0	-1.03305	no	0
Total	100			123

Table 10:

Block 9				
Alter	1.01626	3.530542	yes	15
Bowl	42.88618	-1.37076	no	633
Cup	19.57995	0.294623	no	289
Dipper	2.371274	5.179474	yes	35
Globular	0.067751	-1.23356	no	1
Jar	7.452575	0.94064	no	110
Jug	0.677507	0.939786	no	10
Large-Closed	0.067751	6.667403	yes	1
Large-Open	0.203252	-1.78572	no	3
Lid	1.151762	1.297442	no	17

Pot	19.98645	0.384361	no	295
Rectangular	0.338753	-0.58287	no	5
Small-Open	0	-1.79847	no	0
Storage	4.200542	0.514374	no	62
Strainer	0	-1.03305	no	0
Total	100			1476

Chart 1. Block Two Altars.

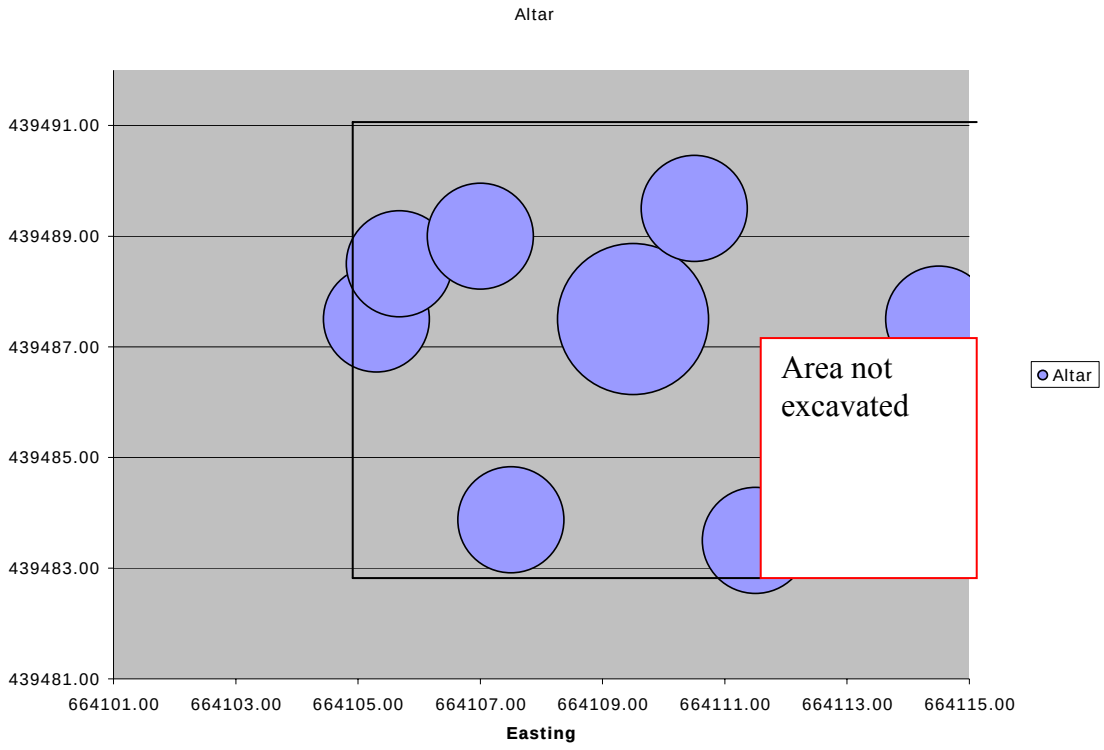


Chart 2. Block Nine Altars.

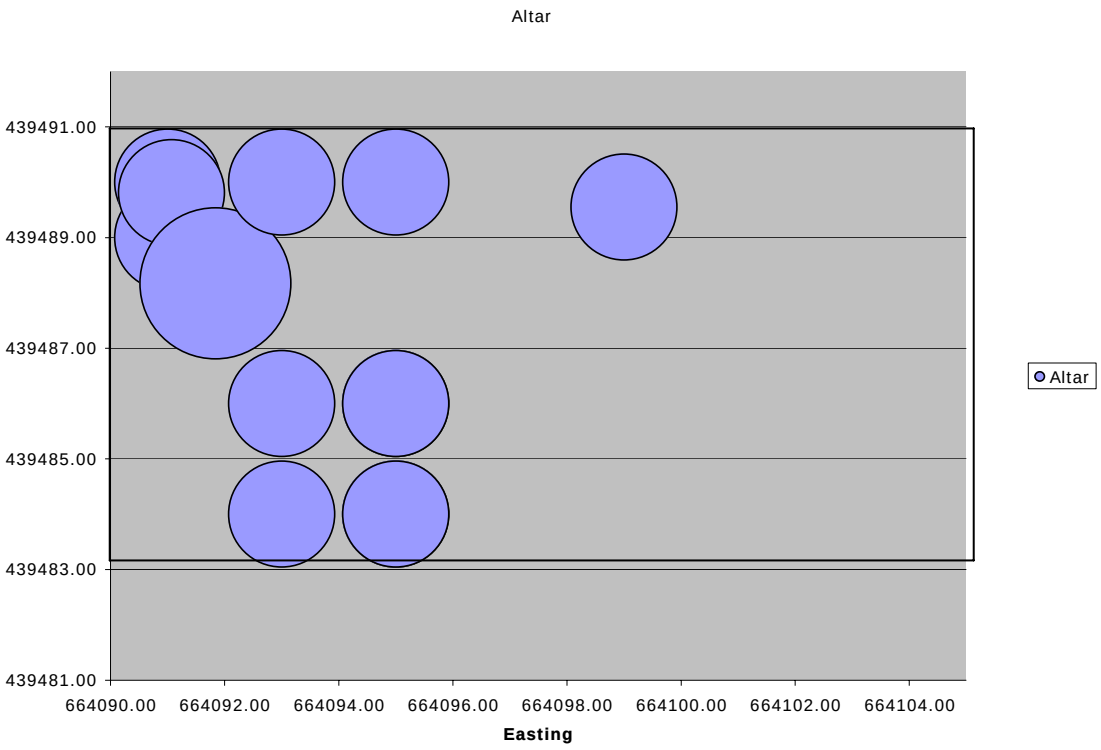


Chart 3. Block Two Bowls.

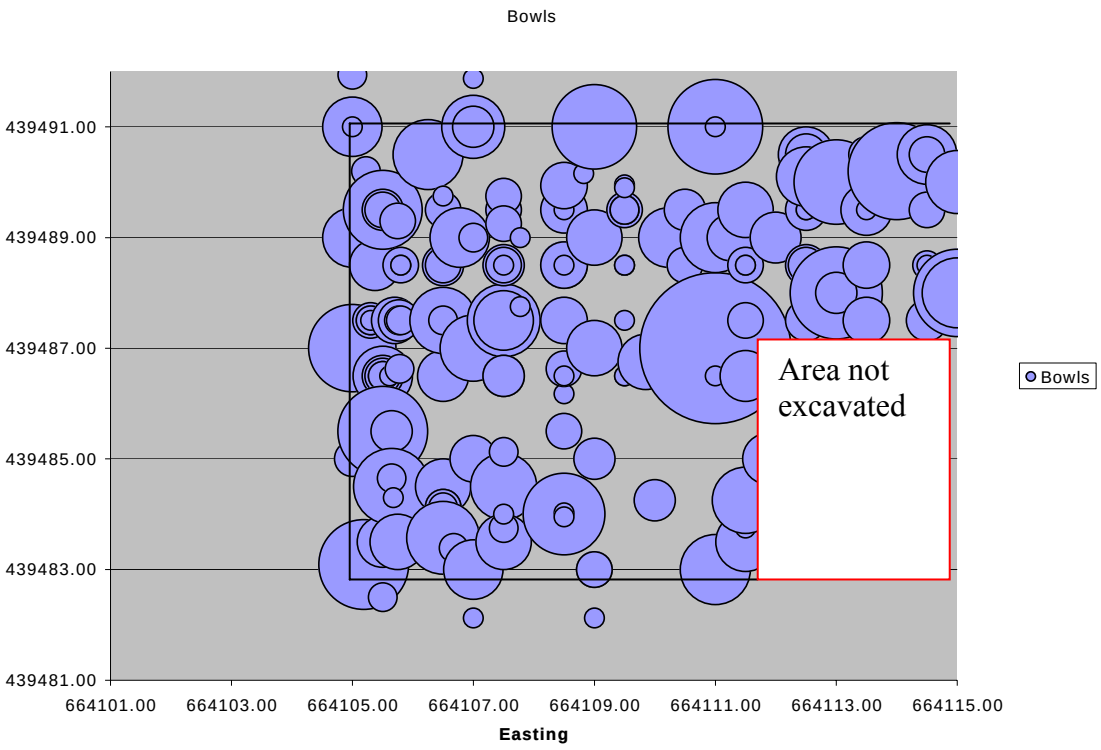


Chart 4. Block Nine Bowls.

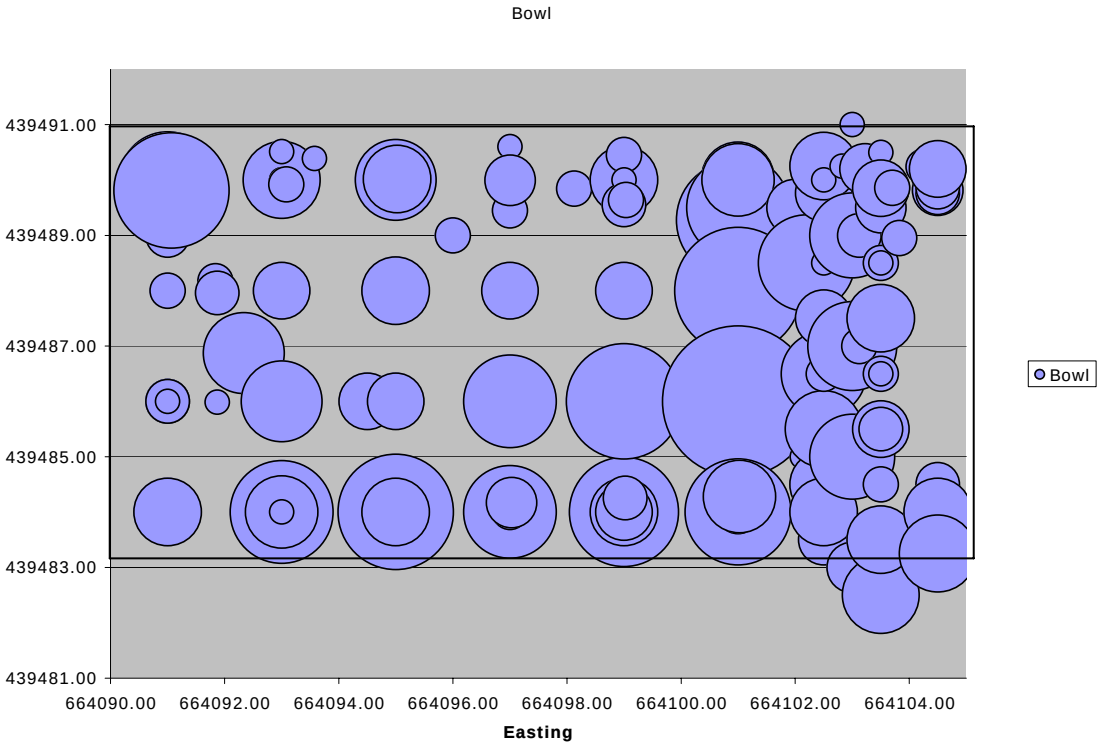


Chart 5. Block Two Cups.

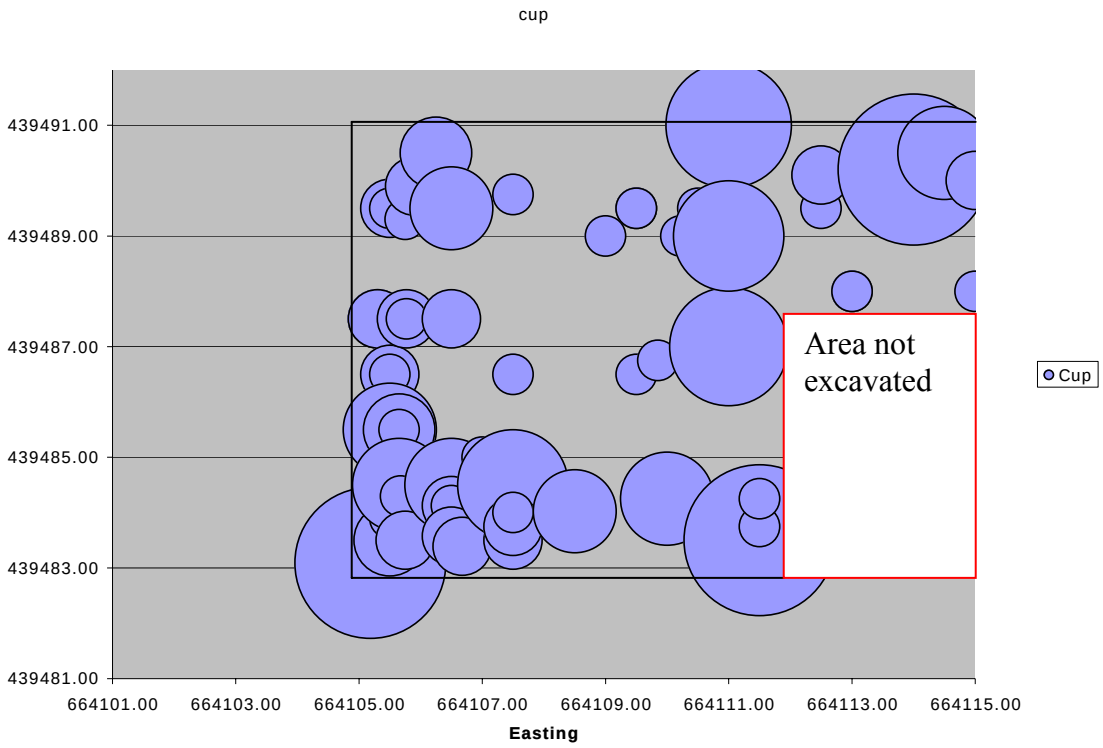


Chart 6. Block Nine Cups.

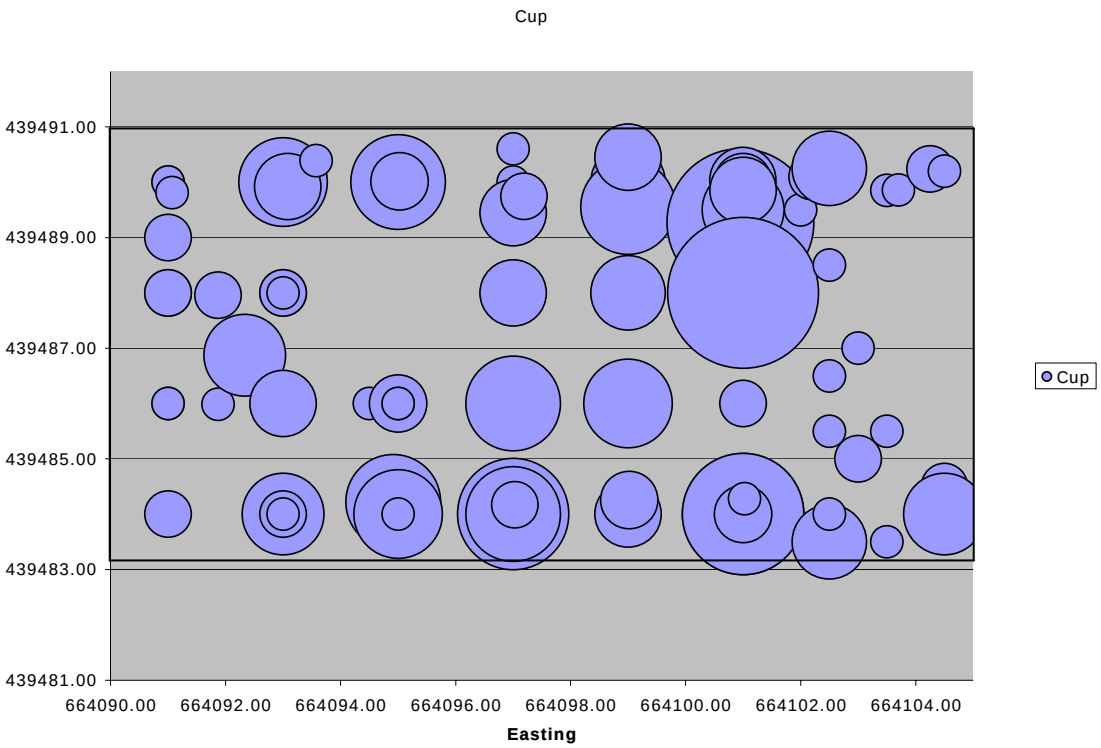


Chart 7. Block Two Dippers.

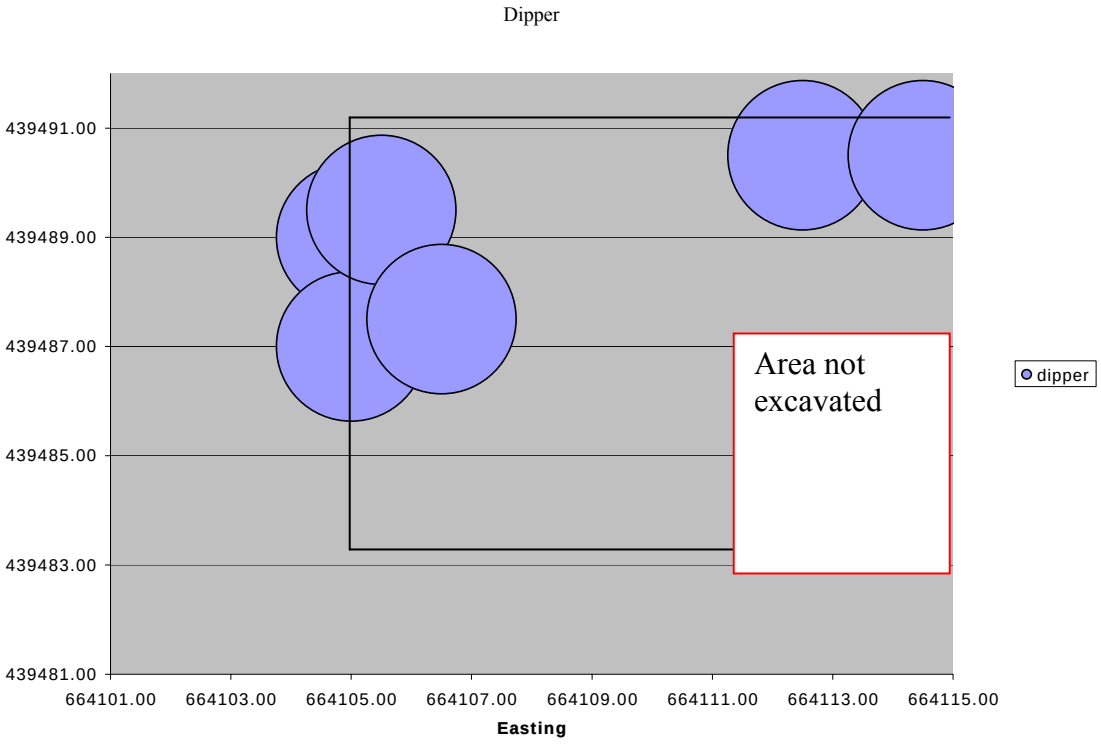


Chart 8. Block Nine Dippers.

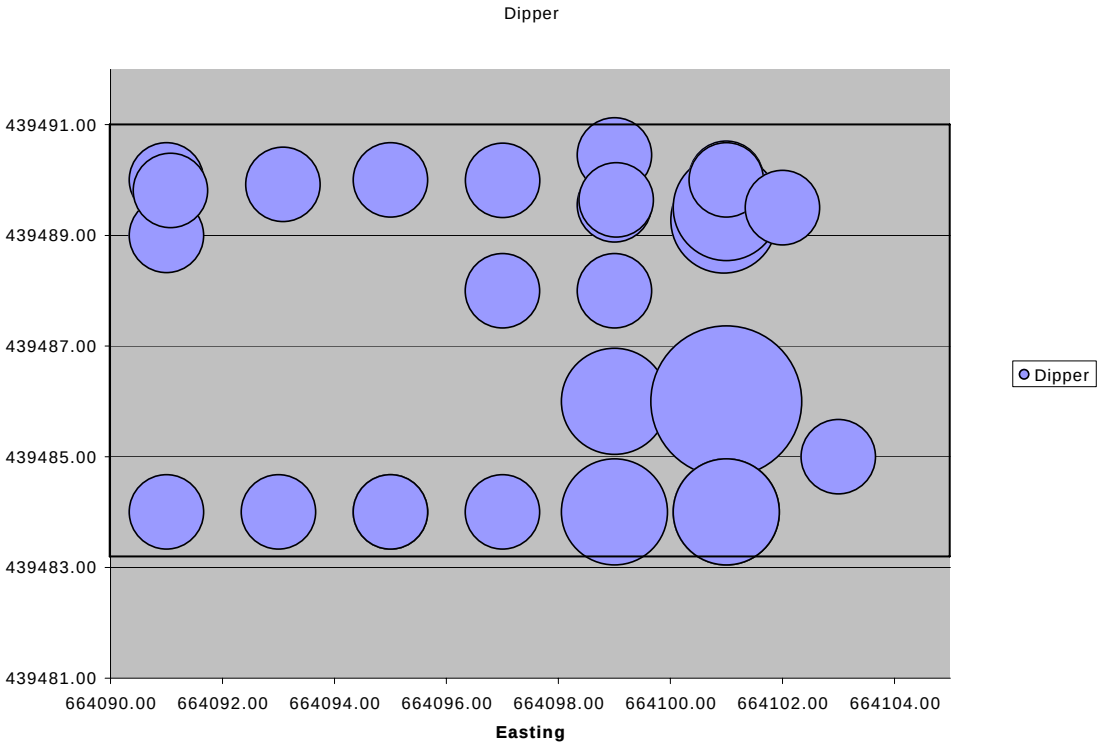


Chart 9. Globular Shaped Vessels.

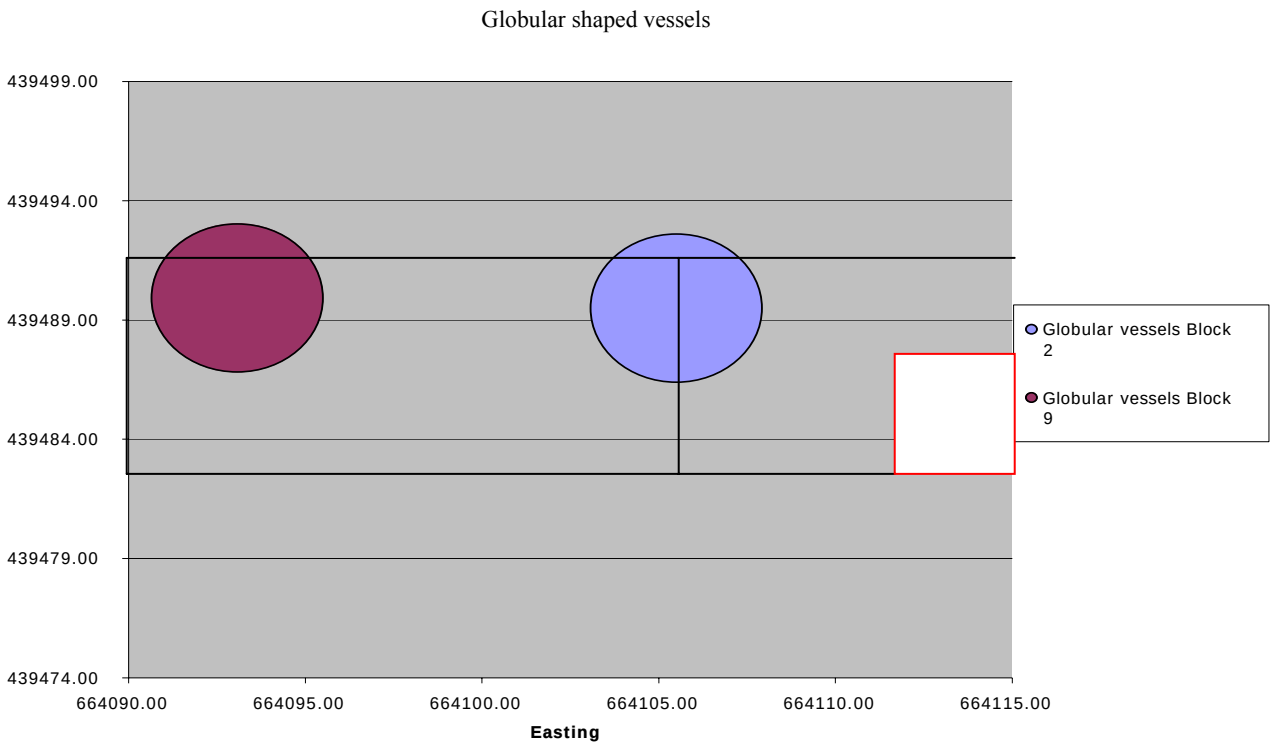


Chart 10. Block Two Jars.

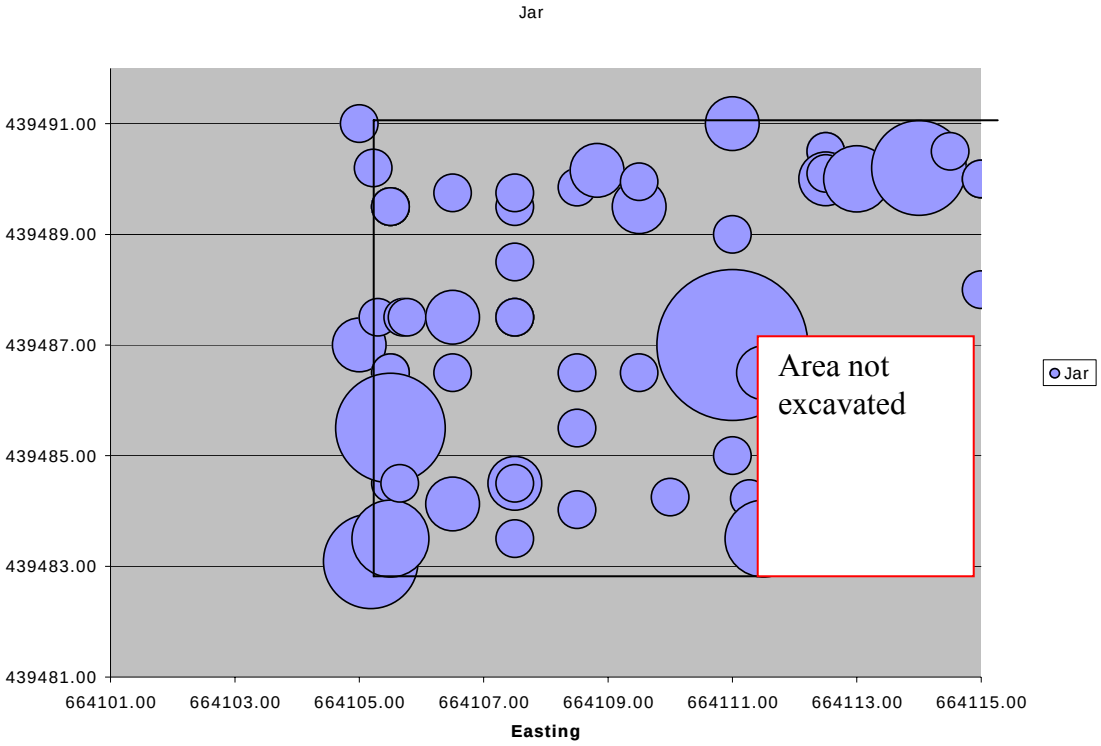


Chart 11. Block Nine Jars.

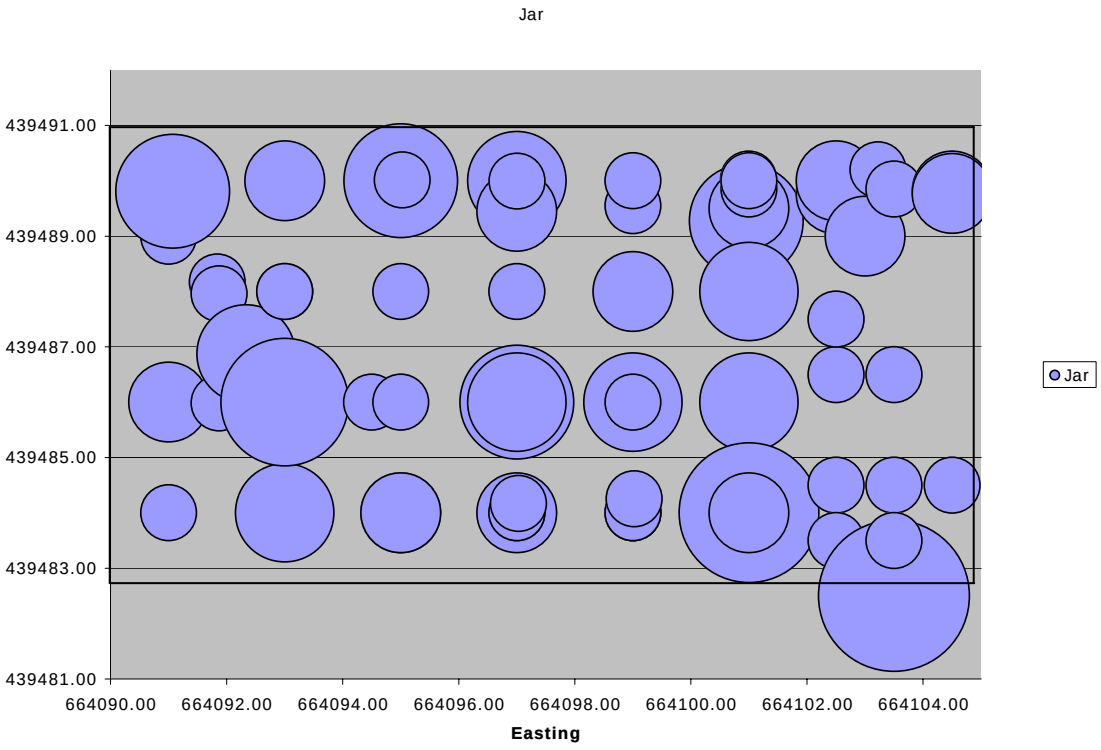


Chart 12. Block Two Jugs.

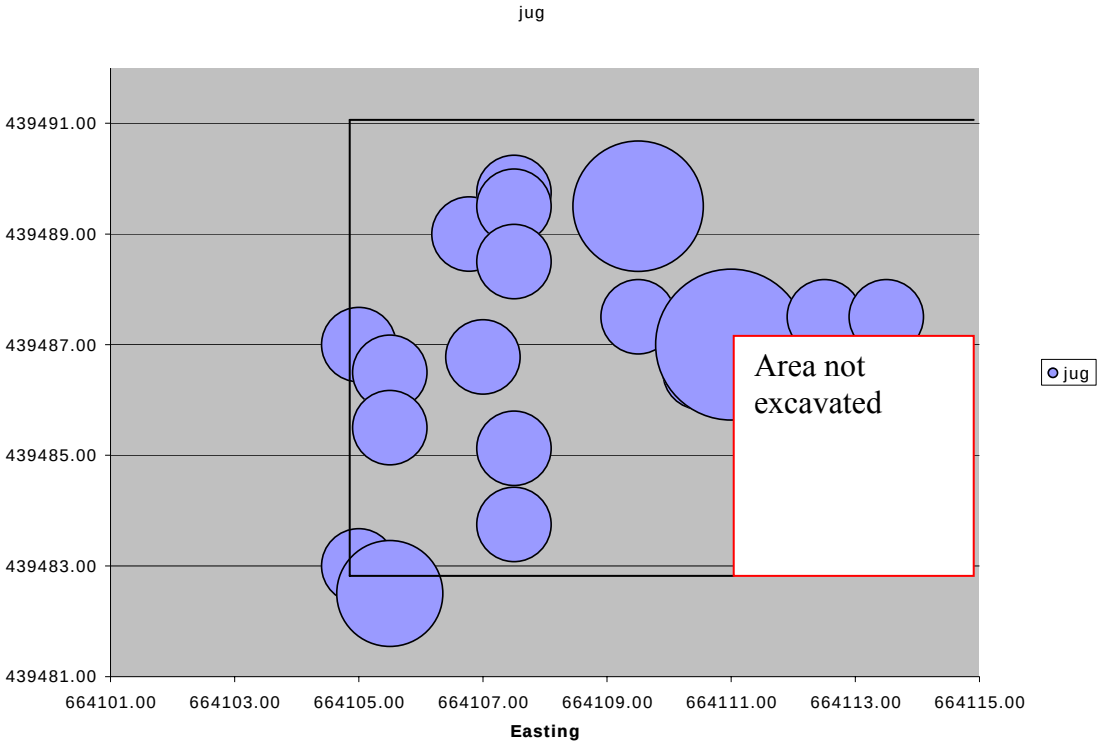


Chart 13. Block Nine Jugs.

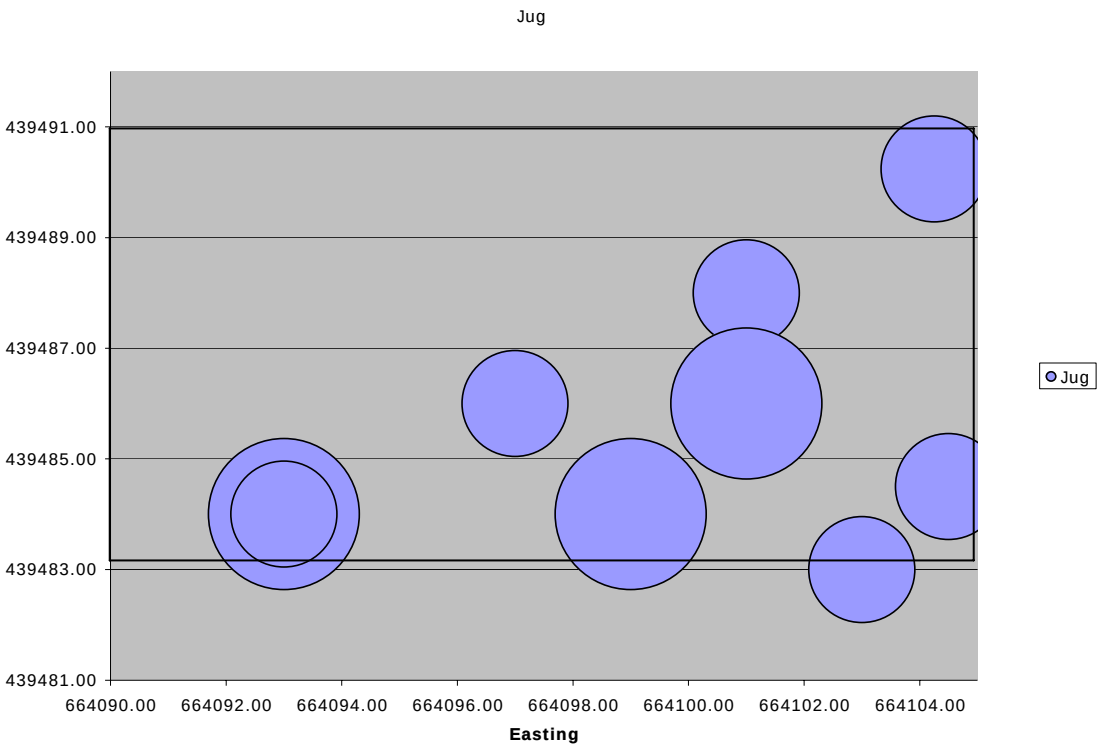


Chart 14. Large Closed Mouthed Pedestal Based Vessels.

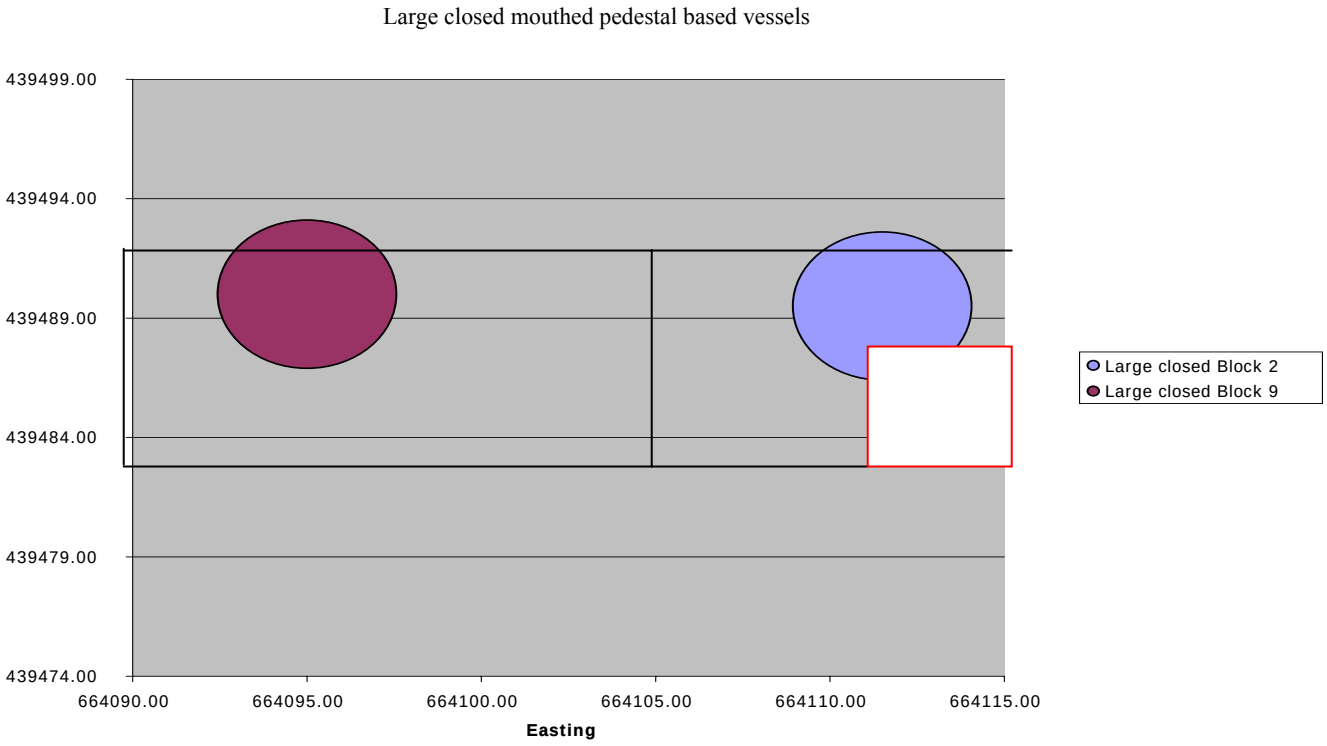


Chart 15. Block Two Large Open Mouthed Pedestal Based Bowls.

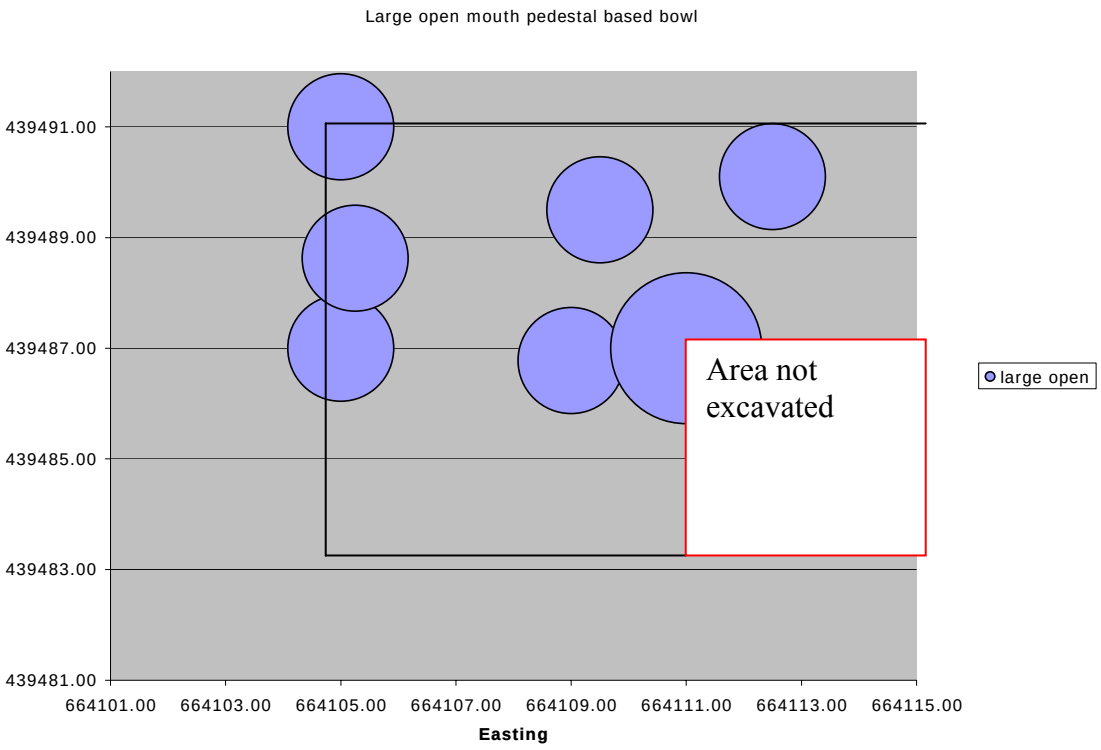


Chart 16. Block Nine Large Open mouthed Pedestal Based Bowls.

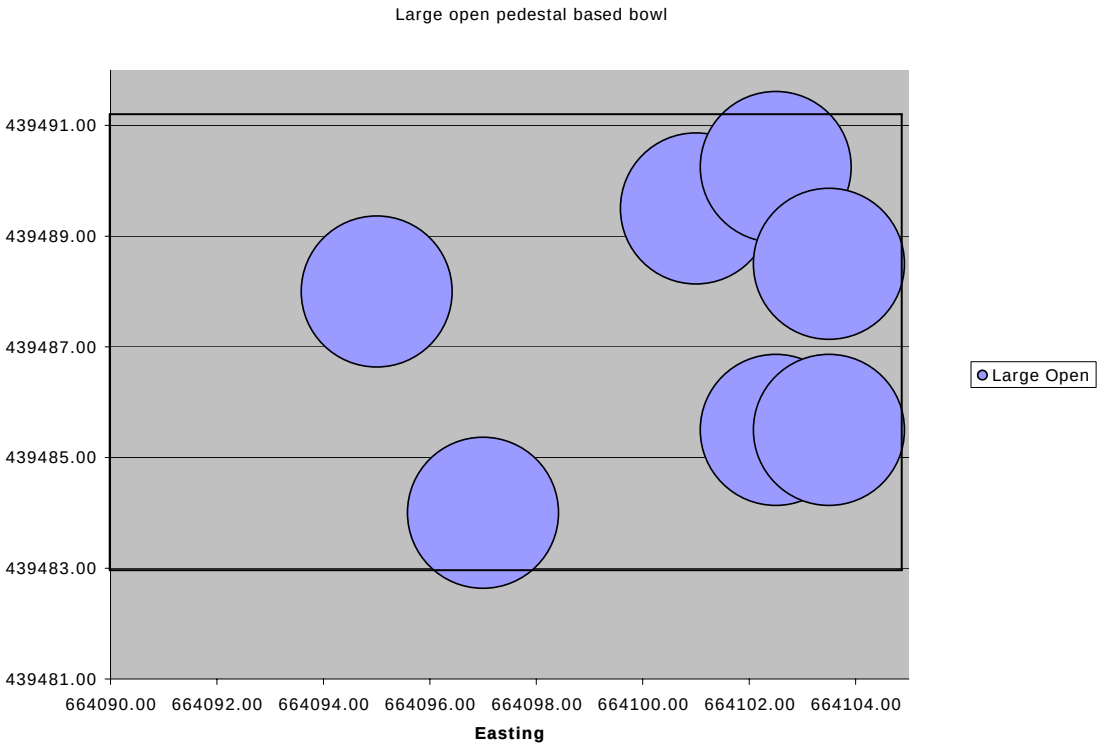


Chart17. Block Two Lids.

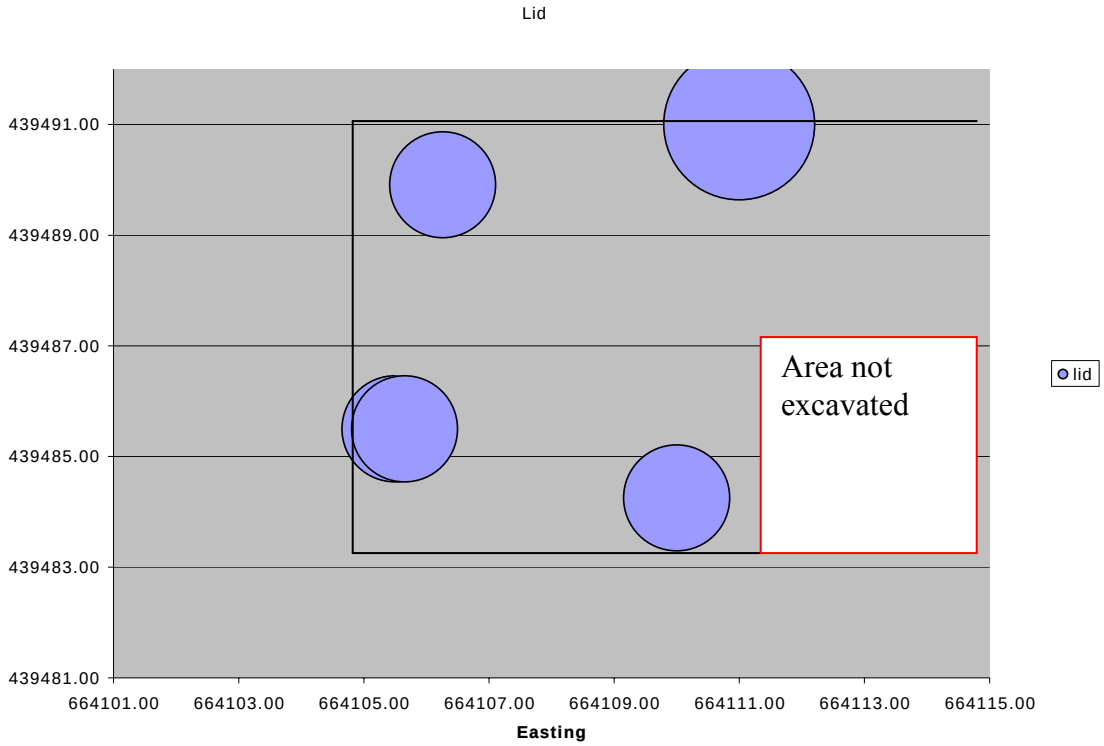


Chart 18. Block Nine Lids.

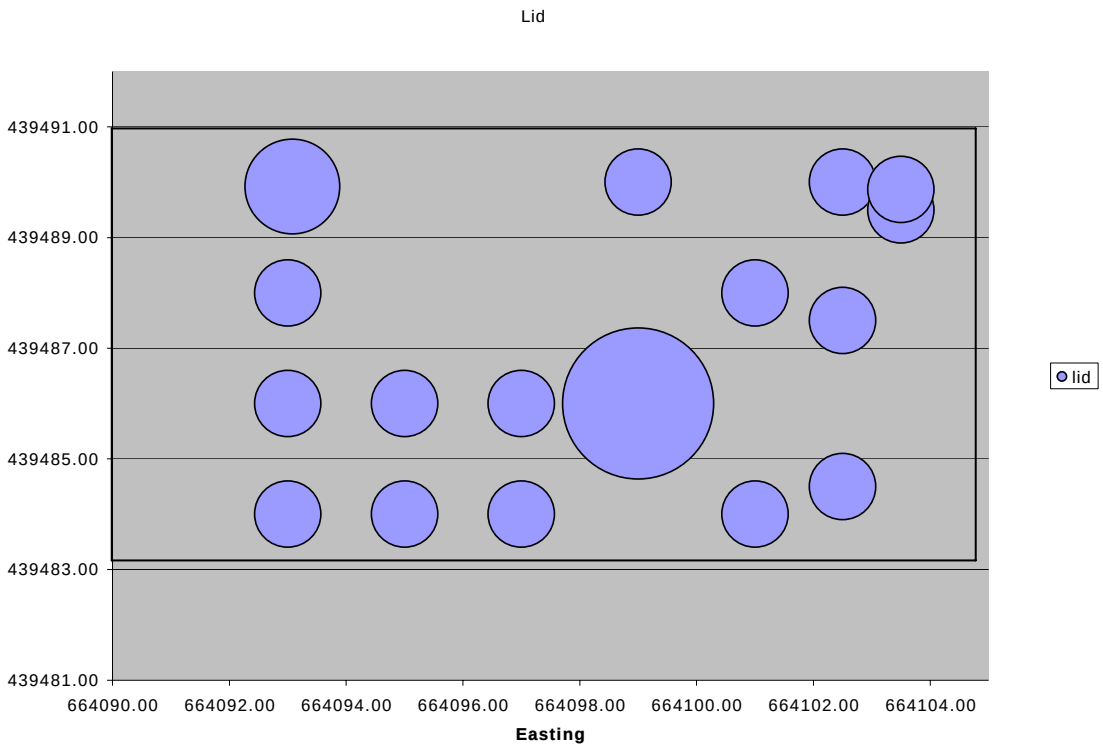


Chart 19. Block Two Pots.

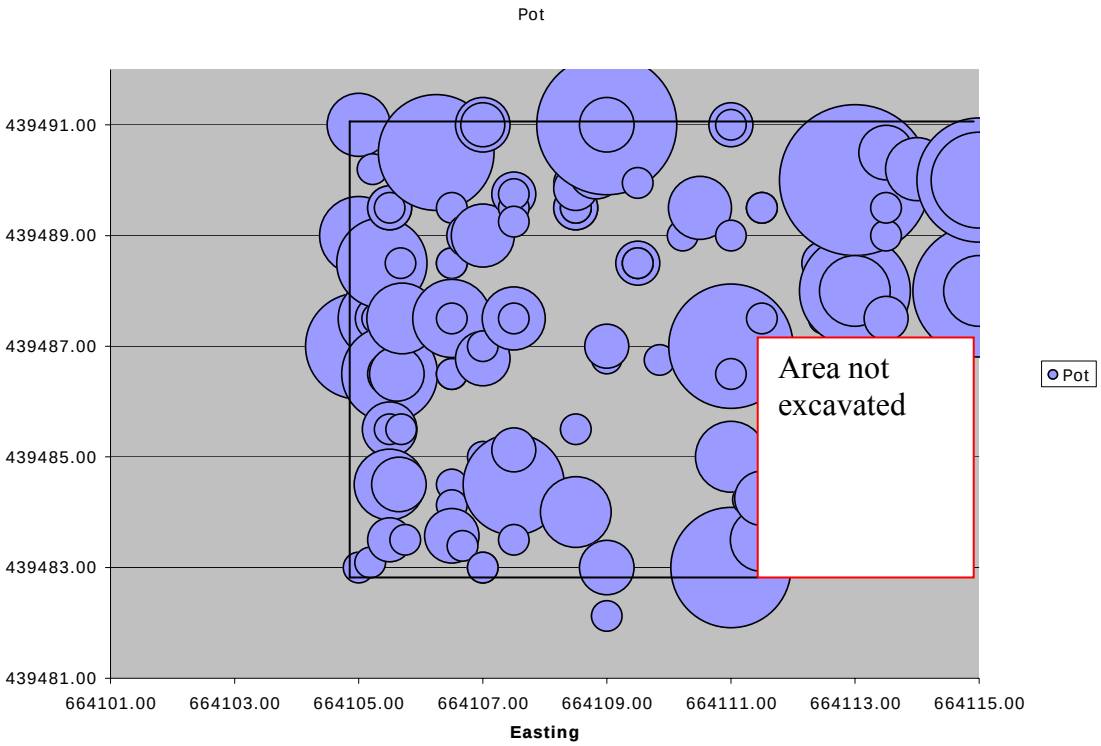


Chart 20. Block Nine Pots.

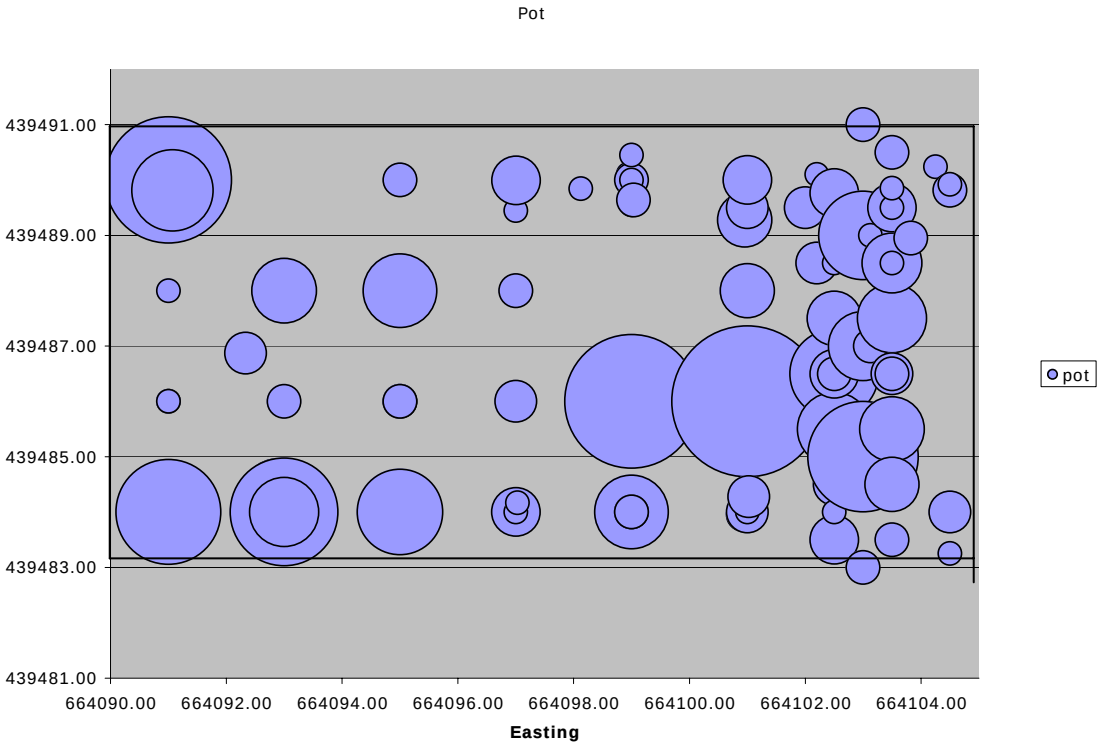


Chart 21. Block Two Rectangular Shaped Vessels.

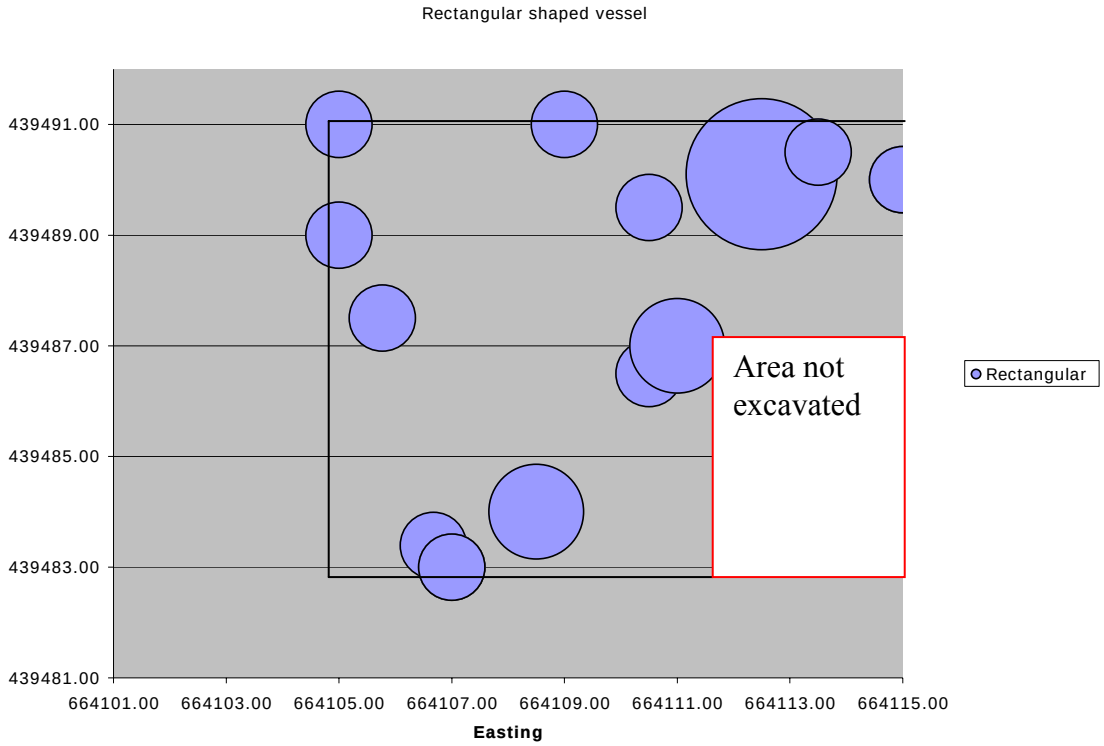


Chart 22. Block Nine Rectangular Shaped Vessels.

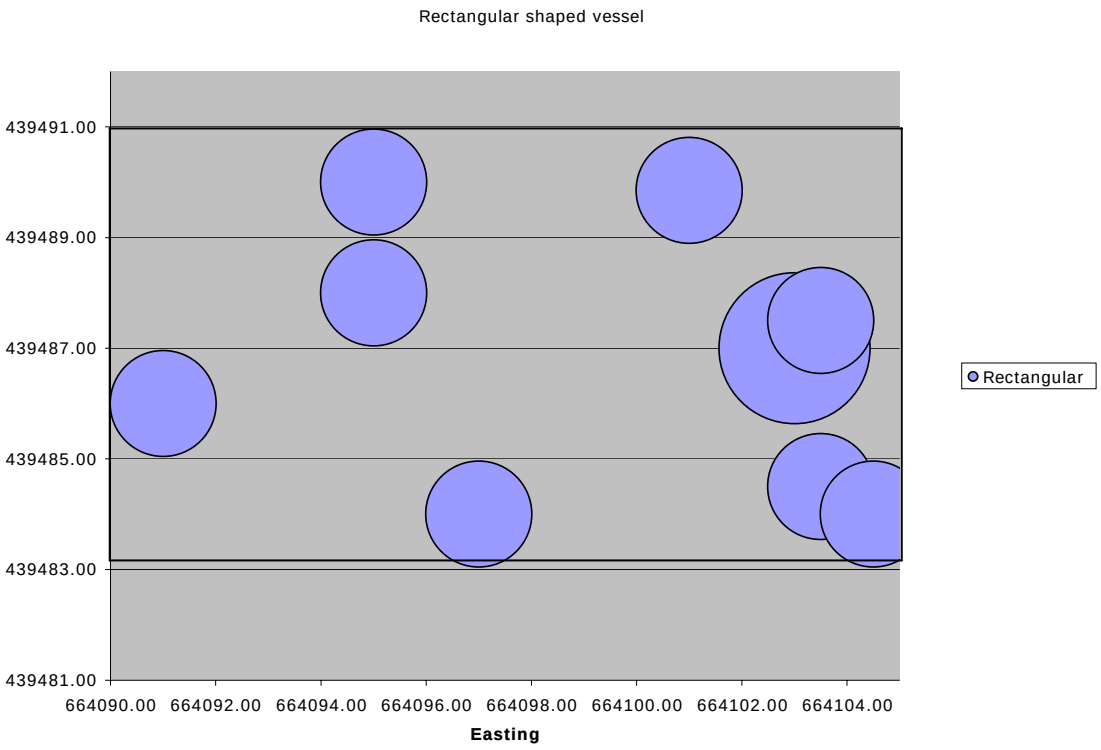


Chart 23. Block Two Storage Vessels.

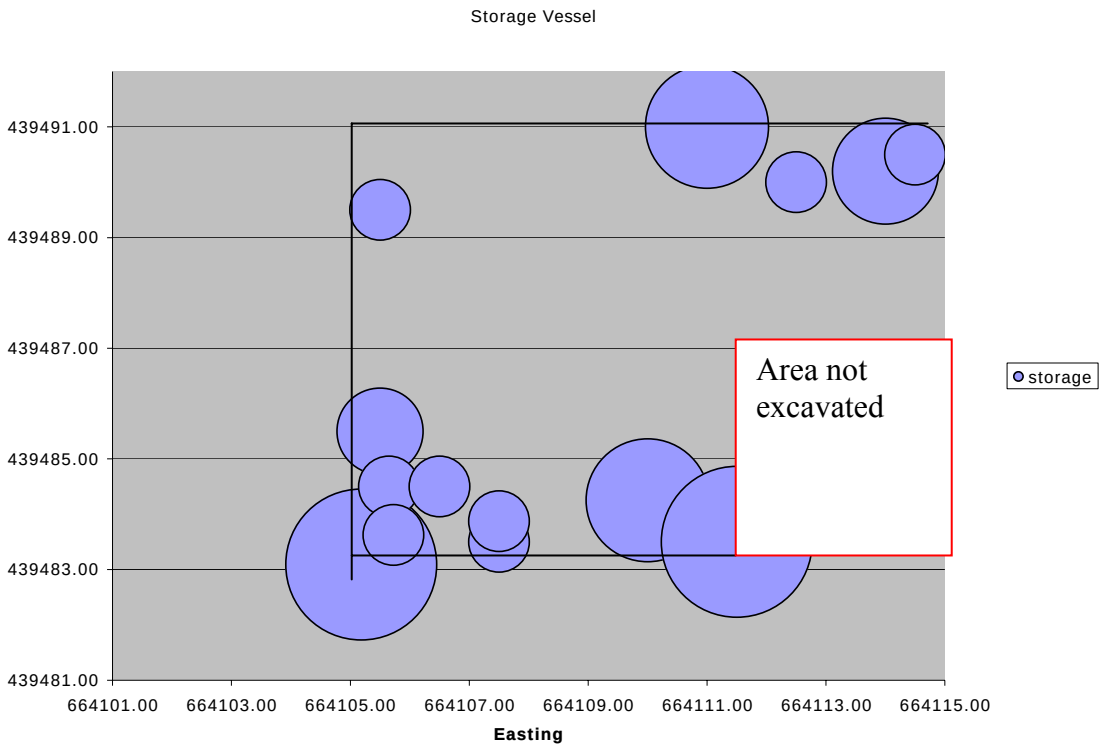


Chart 24. Block Nine Storage Vessels.

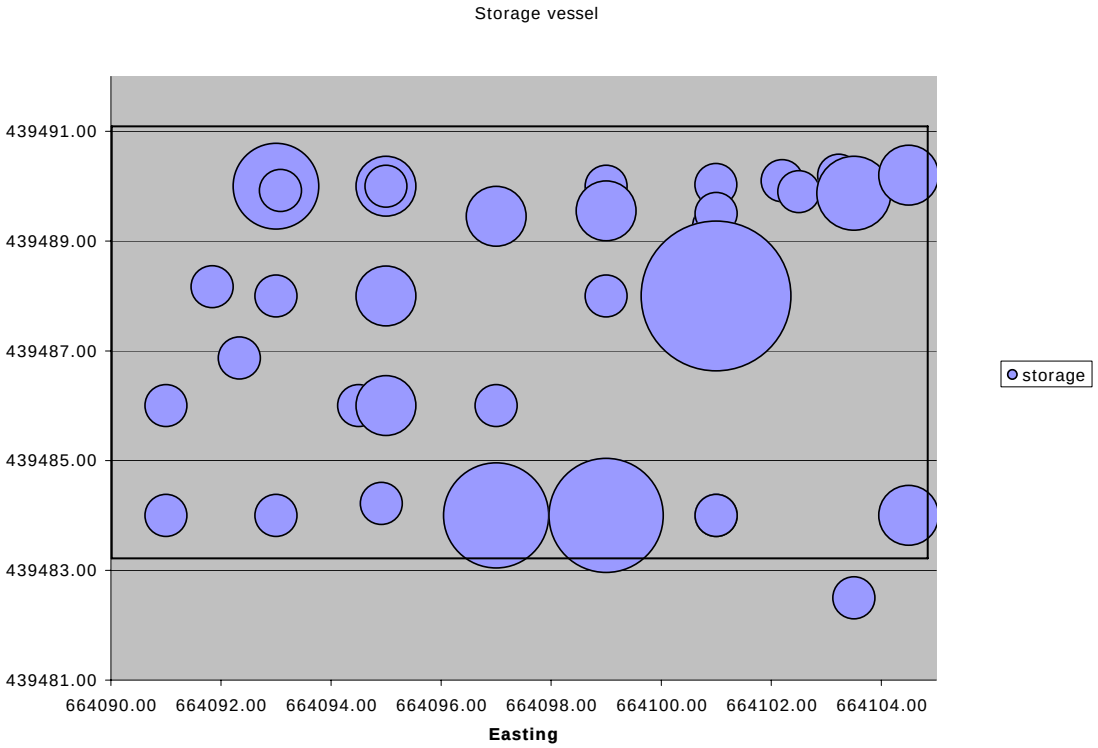


Chart 25. Block Two Strainer.